Fisher & Paykel
HEALTHCARE

IW900 SERIES WARMER AND ACCESSORIES TECHNICAL MANUAL

IW910 Baby Control Mobile Infant Warmer

IW920 Manual Control Mobile Infant Warmer

IW930 Series Baby Control CosyCot™ Infant Warmer

IW950 Series Manual Control CosyCot™ Infant Warmer

IW960 Baby Control Wall Mount CosyCot™ Infant Warmer

IW970 Manual Control Wall Mount CosyCot™ Infant Warmer

IW980 Baby Control Wall Mount Infant Warmer

IW990 Manual Control Wall Mount Infant Warmer

IW900 Series Infant Warmer Accessories

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Please Read

All maintenance should be undertaken by qualified service personnel.

Fisher & Paykel Healthcare has a policy of continued product improvement and reserves the right to alter specifications without notice. This manual covers IW900 Series Infant Warmers and accessories with controller software version up to and including 3.00 and controller printed circuit board revisions up to and including Rev A.

Warranty

Subject to any agreement to the contrary, the product described in this manual is warranted against defects in materials and workmanship for one year from the date of shipment. However, the warranty is void if the product is damaged as a result of mishandling, accident or misuse. In no event shall the manufacturer be liable for incidental or consequential damages (eg. loss of use) resulting from breach of warranty. All other expressed and implied warranties under law is excluded to the extent that it can be lawfully excluded.

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PART 1: Definitions

Attention:
Consult Accompanying Documents

Caution: Electric Shock Hazard

Protective Earth

Alternating Current

Functional Earth

Mute (alarm silence)

Light

Power On
(connect to the mains power supply)

Power Off
(disconnect from the mains power supply)

Power On (only for part of equipment)

Power Off (only for part of equipment)

Cover the baby's eyes while phototherapy light is on.

Wrong and correct positioning of Phototherapy Lamp head in path of Infant Warmer radiation

Contact your local distributor to recycle waste electronic goods responsibly

Caution: ESD sensitive

25% power level
(Prewarm or Standby Mode)

Baby Mode (Servo mode)

Manual Model

Check Baby

+1°C High Temperature Alarm

-1°C Low Temperature Alarm

Sensor Disconnect

Power Disconnect

Temperature Sensor

Sensor Temperature ºC

Type B Equipment

Type BF Applied Part

Timer

Portable and mobile RF communications equipment can effect MEDICAL ELECTRICAL EQUIPMENT

Warning Statement

WARNING

A WARNING statement refers to the conditions when the possibility of injury to the patient or user exists if a procedure is not followed correctly.

Caution Statement

CAUTION

A Caution statement indicates the possibility of damage to the equipment exists if a procedure is not followed correctly.

Note Statement

NOTE:

A Note statement provides additional information intended to clarify points, procedures or instructions.

PART 2: Operation and General Information

2.1 Product Overview

INTRODUCTION

The Fisher & Paykel range of radiant warmers are specifically designed to provide a controlled source of warmth to Neonates.

MODELS

The IW910 Baby Control and IW920 Manual Control Mobile Infant Warmers provide truly mobile and height adjustable warming wherever needed.

The IW930 Series Baby Control and IW950 Series Manual Control CosyCot™ Infant Warmers combines an integrated bassinet with four base accessory options:

IW931 Standard Size Bassinet & Mattress – Preset Base
IW932 Standard Size Bassinet & Mattress – Electric Elevator Base
IW933 Long Bassinet & Mattress – Preset Base
IW934 Long Bassinet & Mattress – Electric Elevator Base

IW951 Standard Size Bassinet & Mattress – Preset Base
IW952 Standard Size Bassinet & Mattress – Electric Elevator Base
IW953 Long Bassinet & Mattress – Preset Base
IW954 Long Bassinet & Mattress – Electric Elevator Base

To these base models optional accessories can be added to suit you own particular warming needs

The IW960 Baby Control and IW970 Manual Control Wall Mount CosyCot™ Infant Warmers combine the integrated CosyCot™ bassinet with the benefits of wall mounting.

The IW980 Baby Control and IW990 Manual Control Wall Mount Infant Warmers provide discrete and convenient space saving warming.

HEAT CONTROL

In *Baby Mode* (IW910, IW93x, IW960 & IW980 only), the infant warmers provide stable control of the baby's skin temperature by automatically adjusting the heater power to compensate for varying physiological and environmental conditions. This is achieved using a microprocessor which measures and updates the baby's temperature ten times every second.

In *Manual Mode*, all infant warmers provide user-adjustable heater power and the option to monitor the baby's skin temperature using the DuoSense™ skin sensor.

In *Prewarm Mode* all models provide alarm and trouble-free pre-warming of the heater.

DUOSENSE™ SKIN SENSOR

Safety is further enhanced by DuoSense™ skin sensor. This sensor measures the desired skin temperature using two independent sensors. These sensors are continuously compared to ensure accurate and reliable skin temperature measurements.

OPERATING MANUAL

This technical manual is intended to be used in conjunction with the 900 Series Operating Manual (see part numbers below) and Installation and Assembly Instruction Sheets. The operating manuals must be read thoroughly and all instructions, warnings, cautions and notes thoroughly understood by all personnel working with warmers prior to use.

185043372 English/French/Spanish
185043373 German/Swedish/Norwegian
185043374 French/Dutch/Italian/Spanish/Portuguese

2.2 Heater Power Control

2.2.1 Modes of Power Control

PREWARM MODE

Power is fixed at 25% (total irradiance at 68 cm < 10 mW/cm^2). This is sufficiently low that minimal alarms need to be active but sufficiently high that the heating element will keep warm and be ready for immediate use.

MANUAL MODE

Power is adjustable in the range 0% to 100% in 5% steps.

BABY/SERVO MODE

Power is automatically controlled according to the measured skin temperature to achieve the desired set temperature. The set temperature is adjustable from 34.5°C to 37.5°C in 0.1°C steps.

2.2.2 Description of Power Control

POWER COMPENSATION

The actual mains power delivered to the element is not equal to the power displayed on the front panel of the controller, as the device is continually monitoring the mains voltage level and compensating for any slumps and surges that may occur.

In all power delivery modes the amount of mains power delivered to the element is calculated as shown below.

$$P_{Delivered} = P_{Displayed} \frac{P_{Ceiling}}{100} \frac{V_{-7.5\%}^2}{V^2}$$

Where:

$P_{Displayed}$ is the displayed power level (*Power Display*).

$P_{Ceiling}$ is the power ceiling (currently 100% for all models).

$V_{-7.5\%}$ is the nominal line voltage less 7.5% (e.g. 213V for 230V device).

V is the current line voltage.

$P_{Delivered}$ is the actual amount of mains power delivered to the element. Actual power delivered should be constant for constant power displayed.

RESOLUTION AND DUTY CYCLE

Power to the element is controlled with a triac and switched only on mains zero crossings to maximise electromagnetic compatibility.

When in *Baby Mode*, the power is controlled to a resolution of 1%. Power is delivered in an optimally smooth pattern of mains pulses which repeats every 2 seconds at 50 Hz (1.7 seconds at 60 Hz). This even power control helps to reduce ripple in the baby or patients skin temperature. The power level is automatically adjusted ten times every second.

2.3 Control Panel

2.3.1 All Infant Warmer Models

LIGHT INDICATOR AND BUTTON	The Light Button toggles the examination light off and on. The Light Indicator is lit when the light is on and extinguished when the light is off. If the light fails during use a short tone will sound and the light indicator will extinguish. If the light is turned on with a faulty bulb, the indicator will turn on, there will be a short tone and the indicator will extinguish.
PREWARM INDICATOR AND BUTTON	The Prewarm Button begins *Prewarm Mode*. The Prewarm Indicator will be lit if the button is pushed.
MANUAL INDICATOR AND BUTTON	The Manual Button begins *Manual Mode*. The Manual Indicator will be lit if the button is pushed.
APGAR INDICATOR AND BUTTON	The Apgar Button starts an Apgar timer with Apgar tones at 1 min, 3 min (optional), 5 min, and 10 min. The indicator lights while the Apgar timer is active to help distinguish it from a count down timer. The Apgar timer will blank at 60 minutes. Re-pressing the button will clear the timer.
TIMER DISPLAY	Displays the current time of the Apgar timer, timer 1 and timer 2 when they are active. Also used by Information Mode.
BABY SKIN TEMPERATURE DISPLAY	Displays the current baby skin temperature when a skin sensor is inserted in *Manual Mode* or *Baby Mode*. Displays 'HI' if the temperature exceeds 50°C. Displays '---' in the event of a sensor disconnect alarm. Blanks when in *Prewarm Mode* or when no skin sensor is inserted in manual mode.
POWER DISPLAY	Displays the current output power level in the range 0% to 100% in 5% steps.
CONTROL KNOB	Adjusts set temperature in *Baby Mode* and set power level in *Manual Mode*. Adjusts preset start times when either the Timer 1 Button or the Timer 2 Button is held down (IW910, IW93x, IW960 & IW980 only). Also used in Information Mode (see Section 2.5).

2.3.2 IW910, IW93x, IW960 and IW980 Servo Control Models

BABY INDICATOR AND BUTTON	The Baby Button begins *Baby Mode*. The Baby Indicator will be lit if the button is pushed.
TIMER1 BUTTON	Starts Timer 1 at the preset start time. Holding the button down allows the Timer 1 preset start time to be adjusted with the control knob. Re-pressing the button will clear the timer.
TIMER2 BUTTON	Starts Timer 2 at the preset start time. Holding the button down allows the Timer 2 preset start time to be adjusted with the control knob. Re-pressing the button will clear the timer.
MUTE BUTTON	Inactive unless one of the following alarms is active: Sensor Disconnect alarm, High Temperature alarm, Low Temperature alarm and Check Baby alarm. In each case pressing the Mute Button silences the audible alarm (for 10 minutes) and in the case of the Check Baby alarm it cancels the visual alarm as well (for another 15 minutes).
SET TEMPERATURE DISPLAY	Displays the current set temperature when in *Baby Mode*. Blanks in *Prewarm Mode* or *Manual Mode*. Also used by Information Mode.

2.4 Alarms

2.4.1 IW910, IW93x, IW960 and IW980 Servo Control Models

CHECK BABY ALARM

In *Baby Mode* this alarm means the output power has been at 100% for at least 15 minutes indicating that the baby is slow rising to the set temperature and should be checked. In *Manual Mode* this alarm means the output power has been above 25% for at least 15 minutes indicating that the baby should be checked.

HIGH SKIN TEMP. ALARM

In *Baby Mode* this alarm means the baby skin temperature exceeds the set temperature by at least 1.0°C. In *Prewarm Mode* or *Manual Mode* this alarm means the baby skin temperature exceeds 39°C.

LOW SKIN TEMP. ALARM

In *Baby Mode* this alarm means the set temperature exceeds the baby skin temperature by at least 1.0°C. This alarm is not active in *Prewarm Mode* and *Manual Mode*. This alarm is disabled for 15 minutes each time baby mode is started and re-enabled each time the skin temperature gets within 0.5°C of set temperature.

SENSOR DISCONNECT ALARM

In *Baby Mode* this alarm means a problem has been detected with the skin temperature sensor. This may mean: (a) If '---' is flashing on the Baby Skin Temperature Display the sensor plug is not inserted fully into the socket, and/or (b) that one of the thermistor beads within the DuoSense™ skin sensor does not agree with the other so that the sensor can no longer be considered accurate. A bead mismatch alarm occurs within 25 seconds of the sensor being plugged in. Both meanings apply in *Baby Mode*, meaning (b) only applies in *Manual Mode* and neither apply in *Prewarm Mode*.

2.4.2 IW920, IW95x, IW970 and IW990 Manual Control Models

CHECK BABY ALARM

This alarm has three meanings:

(a) Manual Mode 15 Minutes
The infant warmer has been running in *Manual Mode* at over 25% power for more than 15 minutes. The baby should be checked.

(b) *Skin Temperature > 39°C*
This alarm is accompanied by a flashing Baby Skin Temperature Display (which is > 39°C). The baby should be checked.

(c) Skin Sensor Faulty
The DuoSense™ skin sensor feature of the infant warmer has detected a fault with the skin sensor. This alarm is accompanied by a flashing Baby Skin Temperature Display. Ensure that the skin sensor is fully plugged in. If skin sensor is faulty then discard it.

2.4.3 All Models

SEE MANUAL ALARM

If the LED is flashing then the software has detected a hazard, has shut down the heater and entered this alarm state. If the warmer is able to power up again an error code corresponding to the meaning of the alarm can be obtained with use of the Information Mode (the error code is preserved in non-volatile memory).

If the LED is on constantly and is accompanied by a rapidly pulsing two-tone alarm then the hardware watchdog circuit has detected a micro-controller failure.

If the LED is on constantly and is accompanied by a constant tone then the overheat protector in the heater has tripped.

POWER FAIL ALARM

When this alarm is flashing the power to the warmer has failed.

NOTE: that this may mean the power switch (located on the front panel) is on while the power at the supply wall outlet is switched off.

2.5 Information Mode

Information Mode allows additional information about the warmer to be obtained by the front panel controls and displays. Information mode is intended for use by technical personnel only and should not be used while the warmer is in use. Information mode is used for calibration and diagnostics.

ENTERING INFORMATION MODE

Depress one of the power mode buttons (Prewarm, Manual or Baby) and hold it down. Rotate the control knob in any direction for two complete revolutions. Continue rotating the control knob slowly in the same direction, the mode indicator light will extinguish at one point. If this point is passed the indicator will come back on, rotate the knob back until the point where the indicator is extinguished is reached. Then release the button.

NOTE: If the option is enabled which requires the Baby Button to be held down to change Set Temperature then the Baby Button can not be used to enter information mode.

EXITING INFORMATION MODE

Press one of the power mode buttons (Prewarm, Manual or Baby).

USE OF INFORMATION MODE

The Set Temperature Display shows the engineering information number (EIN) which indicates what information is being displayed. The control knob adjusts the Engineering Information Number (EIN). The Timer Display shows the selected item of information.

AVAILABLE INFORMATION

EIN Meaning of the Timer Display

0 Device configuration (see below for a list of configurations).
1 ROM software version x100 (e.g. 0230 is version 2.30).
2 Present power level (%) in 1% steps.
3 Patient temperature x100 (e.g. 3670 is 36.70°C).
NOTE: 0401 is displayed when the skin sensor is disconnected.
4 Over Temperature reference calibration x100 (e.g. 3950 is 39.50°C).
5 Line voltage as a % of the unit's nominal voltage.
6 Preset options (see below for a list of the options).
7 Error code for last flashing See Manual alarm (see section 2.4 for a list of the possible error codes).

CONFIGURATION NUMBERS

EIN #0 shows the device configuration. The possible configurations are:

Num. Model
0 Used for manufacture only.
1 IW910, IW93x, IW960 or IW980 Baby Control Infant Warmers.
2 IW920, IW95x, IW970 or IW990 Manual Control Infant Warmers.
3 PW810 Servo Control Patient Warmers
4 PW820 Servo Control Surgical Warmers

PRESET OPTIONS

EIN #6 shows which preset options are enabled using one digit of the Timer Display per option (1 means enabled and 0 means disabled). The four digits A, B, C and D, from left to right, have the following meanings:

Digit Option
A Must hold down the Baby Button to change Set Temperature.
B Full volume alarms.
C 3 minute Apgar tone.
D 15 minute Manual Mode alarm.

NOTE: The options are preset to distributor requirements during manufacture. Options A, B and C may be altered at a later date with use of a PC and software available from your distributor. Option D may not be altered as it is a requirement of the IEC60601-2-21 Infant Warmer standard.

2.6 Error Codes

EIN #7 shows the error code corresponding to the last See Manual alarm. This value is kept in non-volatile memory and is updated every time a new error code occurs.

NOTE: Error codes are retained indefinitely and may only change when a new error occurs.

See section 2.5 for access to *Information Mode*.

The possible error codes are:

Code	*Name*	*Meaning*	*Actions to be taken*
0	NONE	No error has occurred.	
1-2	TEMPERATURE MUX	Temperature multiplexer is not responding correctly. Temperature cannot be measured.	Contact distributor.
5	BEADS SHORTED	The two thermistor beads in the DuoSense™ skin sensor are detected to have shorted together. The skin sensor should be checked. Using Figure 10.1.2, check that contact A is not shorted to contact B. If the skin sensor is operating correctly, then there may be a short circuit within the unit itself.	Check DuoSense™ skin sensor operating correctly. If the skin sensor is operating correctly, contact distrubitor.
7	STACK OVERFLOW	The microprocessor stack has overflowed indicating microprocessor or memory failure.	Contact distributor.
11	BUTTON MUX	Button multiplexer is not responding correctly. Buttons cannot be sensed.	Contact distributor.
13	BAD FREQUENCY	Bad Frequency (the device could not sense the frequency of the mains power supply at power up).	Change mains wall power outlet. If error still detected, contact distrubitor.
14	FAILED ADC	One of the regular series of ADC conversions failed to complete in the normal time. This suggests that the internal hardware on the microcontroller has failed and the temperature readings along with other readings can no longer be relied on.	Contact distributor.
15	LED TOGGLE	Bad LED Toggle (the display driver, U1, which drives the LEDs and displays and scans the buttons was detected to be faulty).	Contact distributor.
16	BUFFER OVERFLOW	Serial Buffer Overflow (the RS232 output serial communications buffer was detected to have overflowed).	Contact distributor.
17	MISSING PULSES	Missing Triac Firing (the triac which controls power to the element was sensed as delivering insufficient/uncontrolled power to the element). NOTE: This error may mean the one of the backup hardware circuits has independently detected a fault and disconnected power from the element.	Change mains wall power outlet. If error still detected, contact distrubitor.
18	SPURIOUS PULSES	Spurious Triac Firing (the triac which controls power to the element was sensed as delivering additional/uncontrolled power to the element).	Change mains wall power outlet. If error still detected, contact distrubitor.
19	RELAY OUT	Relay Out (the relay which isolates the element in the event of continuous full power to the element or hardware watchdog failure is detected to have opened).	Contact distributor.

20-28	EEPROM ERROR	Non-volatile memory error (a problem was detected with the non-volatile memory - most of these errors can be recovered from by switching the device off then on again).	Turn mains power switch off. Turn warmer on again. If error code is still present, contact distributor.
30	NOT CONFIGURED	A device configuration is not selected. The device is configured during manufacture and cannot run if a particular model variant has not been set.	Contact distributor.
31	STUCK BUTTON	One of the buttons is stuck down. This can be caused by holding one of the buttons down while the device is turned on.	Turn mains power switch off. Turn warmer on again, without touching control panel. If error code is still present, contact distributor.
34	LIGHT CIRCUIT FAULTY	The light has been detected as turned on when it should be turned off. There is either a fault in the light control circuitry or the light sense circuitry.	Contact distributor.
35	TEMPERATURE PROBLEM	Measurement from the temperature references are so far out of tolerance that auto-calibration of the skin sensor temperatures is impossible. It is likely that the temperature circuit is faulty.	Contact distributor.
36	DEVICE UNTESTED	Contact distributor.	Contact distributor.

2.7 Specification for IW910 and IW920 Mobile Infant Warmers

2.7.1 Electrical Specifications

SUPPLY VOLTAGE AND CURRENT	230 V~ ± 20 V~	2.2 A~ maximum
	120 V~	4.2 A~ maximum
	100 V~ ± 10 V~	5.1 A~ maximum
SUPPLY FREQUENCY	50/60 Hz	
NOMINAL POWER CONSUMPTION	230 V~ model	510 W
	120 V~ model	510 W
	100 V~ model	510 W
HEATER POWER	450 W *Mattress irradiance is 32 mW/cm² at 100% heater power and 68 cm (26.8") heater grill to mattress distance*	
LIGHT POWER	20 W *Maximum intensity is 400 lux at 68cm (26.8") heater grill to mattress distance*	
TEMPERATURE RANGE	Set temperature from 34.5°C to 37.5°C in 0.1°C steps	
TEMPERATURE MEASUREMENT	Displayed range of 4.0°C to 50.0°C in 0.1°C steps Sensor accuracy of ± 0.1°C Skin temperature control resolution of 0.01°C	
TEMPERATURE SENSOR	Twin YSI 400 compatible thermistors with 100 MΩ insulation at 500V between all electrical contacts and the skin surface	

2.7.2 Mechanical Specifications

HEIGHT	Adjustable from 151 cm to 191 cm (59.4" to 75.2") *To suit bassinets from 71 cm to 111 cm (28" to 43.7")*

WIDTH	65 cm (25.6”)
DEPTH	110 cm (43.3”)
WEIGHT WITHOUT ACCESSORIES	22 kg (48.5 lb)
MAXIMUM LOADING	4 kg (8.8lb) of Accessories, 26 kg (57.3 lb) total weight
HEATER HEAD ROTATION	-130º to +130º from centre position
CASTORS	5 x Ø 50 mm (2”), all locking

2.8 Specification for IW93x and IW95x CosyCot™ Infant Warmers

2.8.1 Electrical Specifications

SUPPLY VOLTAGE AND CURRENT	*Voltage*	*Controller only*	*Including Accessories*
	230 V~ ± 20 V~	2.2 A~ maximum	10 A~ maximum
	120 V~	4.2 A~ maximum	12 A~ maximum
	100 V~ ± 10 V~	5.1 A~ maximum	12 A~ maximum
SUPPLY FREQUENCY	50/60 Hz		
POWER CONSUMPTION	*Including accessories (max)*	230 V~ model	2300 W
		120 V~ model	1440 W
	100 V~ model	1200 W	
	Controller and heater only	510 W	
HEATER POWER	450 W *Mattress irradiance is 32 mW/cm² at 100% heater power and 68 cm (26.8") heater grill to mattress distance*		
LIGHT POWER	20 W *Maximum intensity is 400 lux at 68cm (26.8") heater grill to mattress distance*		
TEMPERATURE RANGE	Set temperature from 34.5°C to 37.5°C in 0.1°C steps		
TEMPERATURE MEASUREMENT	Displayed range of 4.0°C to 50.0°C in 0.1°C steps Sensor accuracy of ± 0.1°C Skin temperature control resolution of 0.01°C		
TEMPERATURE SENSOR	Twin YSI 400 compatible thermistors with 100 MΩ insulation at 500V between all electrical contacts and the skin surface		
AUXILLARY POWER OUTLET	2A max – For medical rated devices only (IEC60601-1)		

2.8.2 Mechanical Specifications

HEIGHT	Adjustable from 170 cm to 186 cm (66.9" – 73.2") *With 900IW005x electric elevator module*
	170.5, 180 or 184 cm (67.1", 70.9" or 72.4") *With standard fixed height option*
WIDTH	77 cm (30.3") - *Excluding shelves*
DEPTH	110 cm to 129 cm (43.3" – 50.8") *Depends on accessories fitted, bassinet size and bassinet height*
WEIGHT WITHOUT ACCESSORIES	60.8 kg (134 lb) *If manufactured before February 2004, 54.5 kg (120 lb)*
MAXIMUM LOADING	54.2 kg (119 lb) of Accessories, 115kg (253lb) total weight *If manufactured before February 2004, 60.5 kg (133 lb) of Accessories*
HEATER GRILL TO MATTRESS	68cm (26.8")
HEATER HEAD ROTATION	-130º to +130º from centre position - *Depends on installation*
MATTRESS HEIGHT	87.8 cm to 103.6 cm (34.6" – 40.8") *With 900IW005x electric elevator option*
	88.4, 97.5 or 101.9 cm (34.8", 38.4" or 40.1") *With standard fixed height option*
BASSINET SIZE (STANDARD)	65 cm x 65 cm (25.6" x 25.6') *Standard Mattress size 62 cm x 62 cm (24.4" x 24.4")*
BASSINET SIZE (LONG – 900IW212)	65cm x 75cm (25.5" x 29.5") *Long mattress size 62cm x 72cm (24.4" x 28.4")*
BASSINET SIDE PANEL HEIGHT	16.5cm (14cm front & rear) - *Measured from the bassinet* *If manufactured before February 2004 15cm*
TILTING POSITIONS	-10° to +10° in ½° increments *If manufactured before February 2004 -10° to +10° continuous adjustment*
CASTORS	4 x Ø 100 mm (4") all locking

2.8.3 Electrical Specifications

SUPPLY VOLTAGE AND CURRENT	*Voltage*	*Controller only*	*Including Accessories*
	230 V~ ± 20 V~	2.2 A~ maximum	10 A~ maximum
	120 V~	4.2 A~ maximum	12 A~ maximum
	100 V~ ± 10 V~	5.1 A~ maximum	12 A~ maximum
SUPPLY FREQUENCY	50/60 Hz		
POWER CONSUMPTION	*Including accessories (max)*	230 V~ model	2300 W
		120 V~ model	1440 W
	100 V~ model	1200 W	
	Controller and heater only	510 W	
HEATER POWER	450 W *Mattress irradiance is 32 mW/cm² at 100% heater power and 68 cm (26.8") heater grill to mattress distance*		
LIGHT POWER	20 W *Maximum intensity is 400 lux at 68cm (26.8") heater grill to mattress distance*		
TEMPERATURE RANGE	Set temperature from 34.5°C to 37.5°C in 0.1°C steps		
TEMPERATURE MEASUREMENT	Displayed range of 4.0°C to 50.0°C in 0.1°C steps Sensor accuracy of ± 0.1°C Skin temperature control resolution of 0.01°C		
TEMPERATURE SENSOR	Twin YSI 400 compatible thermistors with 100 MΩ insulation at 500V between all electrical contacts and the skin surface		
AUXILLARY POWER OUTLET	2A max – For medical rated devices only (IEC60601-1)		

2.8.4 Mechanical Specifications

HEIGHT	Adjustable from 150 cm (59.0")
WIDTH	67.5 cm (26.6") *Excluding shelves*
DEPTH	88 -98cm (34.6" - 38.6")
WEIGHT WITHOUT ACCESSORIES	40 kg (88 lb)
HEATER GRILL TO MATTRESS	68cm (26.8")
HEATER HEAD ROTATION	-130º to +130º from centre position *Depends on installation*
MATTRESS HEIGHT	Dependent on installation.
BASSINET SIZE (STANDARD)	65 cm x 65 cm (25.5" x 25.5') *Standard Mattress size 62 cm x 62 cm (24.4" x 24.4")*
BASSINET SIZE (LONG – 900IW212)	65cm x 75cm (25.5" x 29.5") *Long mattress size 62cm x 72cm (24.4" x 28.4")*
BASSINET SIDE PANEL HEIGHT	15cm - *Measured from the bassinet*
TILTING POSITIONS	-10° to +10° continuous adjustment

2.9 Specification for IW980 and IW990 Wall Mount Infant Warmers

2.9.1 Electrical Specifications

SUPPLY VOLTAGE AND CURRENT	230 V~ ± 20 V~	2.2 A~ maximum
	120 V~	4.2 A~ maximum
	100 V~ ± 10 V~	5.1 A~ maximum
SUPPLY FREQUENCY	50/60 Hz	
NOMINAL POWER CONSUMPTION	230 V~ model	510 W
	120 V~ model	510 W
	100 V~ model	510 W
HEATER POWER	450 W *Mattress irradiance is 32 mW/cm² at 100% heater power and 68 cm (26.8") heater grill to mattress distance*	
LIGHT POWER	20 W *Maximum intensity is 400 lux at 68cm (26.8") heater grill to mattress distance*	
TEMPERATURE RANGE	Set temperature from 34.5°C to 37.5°C in 0.1°C steps	
TEMPERATURE MEASUREMENT	Displayed range of 4.0°C to 50.0°C in 0.1°C steps Sensor accuracy of ± 0.1°C Skin temperature control resolution of 0.01°C	
TEMPERATURE SENSOR	Twin YSI 400 compatible thermistors with 100 MΩ insulation at 500V between all electrical contacts and the skin surface	

2.9.2 Mechanical Specifications

HEIGHT	36 cm (14.2")
WIDTH	20 cm (7.9")
DEPTH	76 cm (29.9")
WEIGHT WITHOUT ACCESSORIES	7.4 kg (16.3 lb)
HEATER HEAD ROTATION	-130º to +130º from centre position *Depends on installation*

2.10 Environmental Specifications

	OPERATING	*TRANSPORT*	*STORAGE*
TEMPERATURE	18°C to 30°C	-10°C to 60°C	-10°C to 60°C
HUMIDITY	0% to 90%RH	0% to 90%RH	0% to 90%RH
VIBRATION	Normal Nursery Handling	Normal Transport Handling	

2.11 Equipment Classifications

Class I, Type B
with Class II, Type BF applied part
Continuous operation
Not classified against ingress of liquids
Not suitable for use in the presence of flammable anaesthetics

2.12 Standards and Approvals

Designed to conform to the requirements of:

IEC 60601-2-21
IEC 60601-1
IEC 60601-1-2
UL 2601-1
AS 3200.1.0
CAN/CSA C22.2 No. 601.1
EN 60601-1
ISO 8382 *

*Neopuff™ Infant Resuscitators only

2.14 Electromagnetic environment

2.15 Material statements

The IW900 series warmer and accessories do not contain patient contacting PVC devices plasticized with DEHP.

Intentionally Blank

PART 3: Maintenance and Servicing

WARNING
All maintenance should be undertaken by qualified service personnel.

3.1 Maintenance Schedule

Fisher and Paykel Healthcare recommend that the following Safety, Performance and Functional checks be performed at least annually for all models covered by this manual. It is important to follow hospital and local regulations if more frequent checks are stipulated.

NOTE: A maintenance check sheet is provided in 3.7.

Equipment

Depending on the extent of the service check and the accessories included on your warmer the following equipment may be required.

Safety Analyser:	IEC60601-1 to class BF	
Thermometer:	30 – 40°C	± 0.1°C
Pressure Gauge:	0 – 100psi	± 5% fsd
Pressure Gauge:	0 – 100cm H_20	± 2% fsd
Flowmeter:	0 – 15 L/min	± 5% fsd
Suction gauge:	0 – 200 mm Hg	± 2.5% fsd
Test Lung:	500RD106	
Calibrated Voltmeter		

All electronics are calibrated during manufacture. Regular calibration is not necessary. A check of calibration is included in the Performance Check.

3.2 Safety Check

WARNING Connect the power cord only to a properly grounded wall receptacle that is approved for hospital use and of the correct voltage. DO NOT use extension cords or an AC receptacle box for this device.

The unit should be tested to the current medical electrical standards for in-house testing for each specific country (example, refer to UL2601-1 for USA, EN60601-1 for Europe, AS/NZS 3551 for Australia and New Zealand). This should be done prior to initial use and at least annually thereafter.

NOTE: To conduct an earth test, the test lead should be attached to a bolt located under a plastic cap at the top of the column – refer diagram 6.2.2 part 5.

NOTE: The Transport Handle is not earthed but is protected in accordance with clause 17a)3) of IEC60601-1. To verify safety conduct a Patient Leakage Current Test under normal operating conditions. The pass criterion is less than 0.01 mA DC or 0.1 mA AC.

NOTE: The Medela Phototherapy Unit is double insulated. To verify safety conduct a Patient Leakage Current Test on the metal arm under normal operating conditions. The pass criterion is less than 0.01 mA DC or 0.1 mA AC.

NOTE: For neoBLUE-mini phototherapy refer to 185043921 service manual

3.3 System Check

This procedure is the recommended performance check for **Fisher & Paykel Radiant Warmers**. A check of calibration is included.

ALARMS CHECK

1. Switch the Power Switch on. **Check** that the increasing pitch start up sound occurs and that the following alarm indicators, depending on the model, flash momentarily: Check Baby, High Temperature, Low Temperature, and Sensor Disconnect depending on model.

POWERFAIL CHECK

2. Unplug the power cord from the wall supply socket. **Check** that the Power Fail Indicator flashes and audible alarm sounds.

STUCK BUTTON

3. Press and hold Prewarm/Standby Button. Reconnect the power cord to the wall supply. **Check** that the warmer starts correctly and that the See Manual indicator flashes and audible alarm sounds. Release the Prewarm/Standby Button.

NOTE: This check causes a Stuck Button error to occur which will be logged as the last error that occurred as accessible via *Information Mode*.

4. Switch the Power Switch off then on again. **Check** that the warmer starts up normally.

CALIBRATION CHECK

5. Enter *Information Mode* (refer section 2.5) and select *EIN* #5.
6. Ensure that the light is off. Measure the mains voltage at the wall outlet supplying the warmer, using a calibrated voltmeter.
7. Calculate and record the measured voltage as a percentage of the devices nominal supply voltage which will be 100V, 120V or 230V.
8. **Check** that the top display reads the calculated percentage (± 5%).
9. Select *EIN* #4.
10. **Check** that the top display reads 3950 ± 20 (39.50 ± 0.2°C). Exit *Information Mode*.

LIGHT CHECK

11. Press the Light Button, **check** the light turns on. Re-press the Light Button and **check** that the light turns off.

POWER MODE CHECK

12. Press each power mode button (Prewarm, Manual, Baby if applicable) and **check** that its respective indicator is lit when the button is pressed.

TIMER MODE CHECK

13. Ensure that the Timer Display is blanked. Press the Apgar Button and **check** that the Apgar Indicator is lit and the time display starts counting. Press the Timer 1 Button and the Timer 2 Button in turn and **check** that the corresponding preset time for each appears on the Timer Display and that the time starts counting down.

HEATER CONTROL

14. For all models:

    Select Manual Mode and set the output power level to 0% (all segments of the power bar are extinguished). Wait 1 minute and **check** that no heat is being given off by the element. Set the output power level to 100% (all segments of the power bar are lit).

TEMPERATURE MEASUREMENT

15. For all models:

    Check condition of skin sensor lead and sensor head.

    Connect a skin sensor to the infant warmer and immerse the sensor end in water that is warmed to a temperature in the range 35.0°C to 37.0°C. Use a calibrated thermometer to **check** the temperature on the Skin Temperature Display is accurate to within ± 0.2°C.

    To check warmer calibration only - 043042566 check probe may be used, refer to section 10.1.3

16. Switch the Power Switch off.

3.4 Functional Check

WARMER HEAD Refer section 6.2.2.	1. Ensure the head is secure and that it can rotate smoothly. If required Head Pivot Nut (1) can be adjusted using a bent wire tool (171042012). If the central détente is not sufficiently positive, Washer Pivot (3) should be replaced.
MOBILE WARMERS Refer section 6.3.2.	2. Ensure everything is secure, in particular the stabiliser weight bolt (18) is tight and that the pole (10) is fully engaged into the warmer support bracket (1) and the stabiliser weight (13).
COSYCOT™ BASE Refer section 8.1.4	3. Ensure all four base to column bolts (11) are fully tightened 9-11.5Nm. Check castors roll and lock.
ELECTRIC ELEVATOR (If fitted) Refer section 8.1.4	4. Check operation of up/down buttons (28) and safety interlock rocker switch (27). Inspect underside of base assembly for any sign of damage or wear. Grease plastic/metal interface sections. Check arm pivot actuator for signs of bending, replace using kit 043042714. Replace retention clips 625060035 as necessary on vacuum formed base.
BASSINET MOUNTING ASSEMBLY If manufactured after February 2004 refer section 7.10	5. Ensure that the bassinet pivot bolts (5) and arm mounting bolts (19) are tight. Check the operation of the tilt mechanism for smooth movement and no slipping. Adjust actuation cable as outlined in section 3.6.8 if required.
If manufactured before February 2004 refer section 7.12	6. Ensure all four M10 x 30 bolts (5), all four M8 x 50 CSK bolts (4) and all six M8 grub screws (2).are tight. Check the operation of the tilt mechanism for smooth movement and no slipping. Adjust actuation cable as outlined in section 3.6.7 if required.
TRANSPORT HANDLE (If fitted) Refer to section 7.10	7. Check operation of handle and release collars (4).
STORAGE DRAWER (If fitted) Refer section 10.13	8. Ensure the drawer slides smoothly. If required clean and grease the sliders with a food grade, non-drying grease.
STORAGE BINS (If fitted) Refer section 10.14	9. Check that the bins rotate smoothly about the bin mounting pole (8) and that the pole itself remains stationary. Ensure the two bin pole bolts (3) are tight and that the bins are orientated in line with the bassinet when in the central détente position.
GAS SUPPLY MANIFOLDS (If fitted)	10. Every six months the regulator output pressure (if fitted) should be verified with an independent pressure gauge to ensure 50-60psi (344.7–413.7kPa) is maintained. The adjustment procedure is detailed in section 9.2.2. Test for leaks annually using the procedure outlined in section 9.2.1.
GAS HOSES	11. Check for any visual signs of wear, damage or deterioration to the gas hose and o-rings, and ensure there is no movement of crimped components away from the hose. Exchange gas hoses as per national or hospital regulations and guidelines.
FLOWMETERS (If fitted)	12. Perform a visual operation check and flow test at 8LPM. For further information refer to the Precision Medical Flowmeter User Manual.
SUCTION (If fitted)	13. Refer to manufacturers manual for maintenance & servicing requirements.
NEOPUFF™ MODULE (If fitted)	14. Check the Neopuff™ in accordance with section 11.3.3.
UPS (UNINTERRUPTIBLE POWER SUPPLY) (If fitted)	15. Check operation, unplug from wall and check that it powers the warmer for >10 mins. Refer to the PowerVar UPS operating manual supplied with the unit for maintenance, troubleshooting, and technical support.
MEDELA PHOTOTHERAPY (If fitted)	16. Check whether the Lamp Replacement Warning Light is lit. Refer to section 12.1.6 to test the warning light. Replace lamps if required referring to section 12.1.4. Check the cable is free from cuts and abrasions and the securing 'P' clip is intact. Check the grommet where

the cable enters arm is in good condition. Check the grille is firmly attached. Check that the head only swivels when twisted by hand and does not turn of its own accord.

3.5 Service Procedures- Replacement

Anti-Static procedures must be observed when handling printed circuit boards (PCB's). Qualified service technicians should carry out all servicing.

3.5.1 Replacement of Halogen Lamp.

a. If the warmer has been running then allow one hour for the heater and lamp to cool.
b. Unplug the mains cable which supplies power to the unit. Turn off the UPS if installed
c. Unlatch the wire clips from the front of the head and remove the screw underneath the front of the head which secures the lower case to the upper case. The rear screw will also need to be removed on heads manufactured after August 2002.
d. Support the front of the head and pull both sides of the lower case down to open.
e. Pull the halogen lamp out. Using gloves to protect the new lamp, install by pushing into receptacle. Use only 12V 20W 50 mm halogen lamps (Fisher and Paykel part # 424040069).
f. Close the lower casing of the head and replace the securing screws and wire clips.
g. Press the lower case along both sides to ensure it is clipped firmly into place.

3.5.2 Replacement of Controller Fuses.

a. Unplug the power cable from the wall supply outlet. Turn off the UPS if installed.
b. Remove the four screws that secure the front control panel to the column (located behind the column).
c. Pull the front panel away from the column until the printed circuit boards are revealed.
d. Disconnect J12 (ribbon cable) from the control PCB. Disconnect J3 (ribbon cable) from the power PCB. Disconnect J6 and J13 (power switch) from the power PCB. Remove the front panel.
e. Controller fuses F1, F2, F3, F4 and F5 are located on the power PCB. Replace as necessary.
f. Hold the control panel beside the column and reconnect connectors J12, J3, J6 and J13. .
g. Replace the front panel checking that it does not interfere with any wiring harnesses, in particular ribbon cable (7) on controller assembly diagram 6.2.2
h. Replace the four screws.

3.5.3 Replacement of Supply PCB Fuses (IW93x, IW95x, IW960 and IW970 models only)

These include fuses for the Electric Elevator Module (if fitted), the Power Outlet (if fitted) and any accessories that may be fitted. Refer to the photo in section 5.4.3 for fuse positions.

a. Unplug the power cable from the wall supply outlet. Turn off the UPS if installed.
b. If 900IW403/405 Storage Bins are fitted these must be removed by unscrewing the eight M8x16 screws shown as part 5 in section 10.14.
c. Remove the four screws that secure the power inlet/outlet module to the column (located behind the column).
d. Supply PCB fuses F1, F2, F3, F4 and F5 are located on the back of the Inlet/Outlet Module. Fuse F4 is common to all of the accessories; fuse F1 is for the Electric Elevator Module, fuse F5 is for the outlet socket and fuse F2 and F3 are for other accessories.
e. Replace the power inlet/outlet module including the four retaining screws.
f. Replace 900IW403/405 Storage Bins.

3.5.4 Replacement of Printed Circuit Boards.

Refer to photos in section 5.4 for PCB component identification. PCB's are not repaired, and individual electronic components are not available. Replacement PCB's are available – refer to section 5.4 for spare part order numbers.

a. Carry out steps a. to d. of section 3.5.2.
b. To remove the control PCB from the front panel disconnect J2 (skin sensor) then release the plastic clips beginning with the ones down the right hand side as viewed from the back.
c. To remove the power PCB from the column disconnect J8, J7, J10, J9 then remove phase and neutral from J5. Unscrew the two 4mm self-tapping screws holding the heat sink to the column.
d. When replacing the power PCBs ensure it is securely held in the column extrusion groove on the right hand side and by the two screws in the heat sink. Ensure that all of the 7 plastic clips/connectors on the control PCB are secure.
e. When replacing the control PCB into the front panel, first remove the control knob (from the front panel) so that it can be re-aligned to the rotary encoder on the control PCB afterwards.

3.5.5 Replacement of Balance spring (IW910 and IW920 models only)

a. Unscrew plastic locking nut on adjustable pole, and remove upper pole with heater and controller.
b. Remove spring from lower pole.
c. Replace spring and refit upper pole.

3.5.6 Replacement of Castors (IW910 and IW920 models only)

a. Grip castor and pull out of mobile base.
b. Push new castor home into castor hole.

3.5.7 Replacement of Castors (IW93x and IW95x models only)

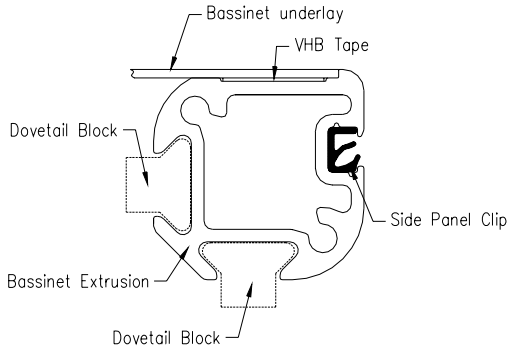
a. Lock castor and unscrew from leg.
b. Lock new castor and screw into leg ensuring that the circlip security plate (39) remains positioned over the circlip (14) (refer diagram 8.1.4).

3.5.8 Replacement/ Addition of Acetal Side Panel Clips (CosyCot™ models with bassinets prior to version 2.5 only)

Please refer to section 7.6 for part reference details.

a. Follow section 3.5.9 to remove the left-hand corner cap from the side of the bassinet on which changes are to be made.
b. Ensure that the Acetal Side Panel Clip(24) is the correct way up and slide the required number into the rectangular gap located on the inside of the Corner Block (3), positioning it into the groove of the bassinet extrusion.
c. Slide the Side Panel Clip along the Bassinet Extrusion (4) until in the desired location. To access all four sides, all four Corner Caps will need to be removed. Reassemble Corner Cap in reverse order.

NOTE: Too many clips may result in unnecessary force and therefore potential damage to the side panel. To meet IEC 60601-2-21 regulations at least two Acetal clips should remain on each side of the bassinet.



Correct Orientation of the Acetal Side panel Clip (693041413)

3.5.9 Replacement of Bassinet Corner Caps (IW93x, IW95x, IW960 & IW970 models only)

Refer to Bassinet Assembly diagram 7.3.2

a. Remove all relevant side panels. Unscrew bolt (17) using a 5mm Allen key. For the front two corners the rear handle (10) should be removed from each corner prior to unscrewing bolt (17).
b. When fitting a replacement plastic corner cap (694042167), ensure the two lugs locate under the top surface of the corner block (3). Tighten bolt (17) to a torque of 3Nm.
c. Replace rear handle (10).

NOTE: For version 2.5 and version 3.0 bassinets the corner cap part number is 694042167.
For version 2.1 bassinets the corner cap part number is 694042134
For version 2.0 and 1.0 bassinets the corner cap part number is 641040819

3.5.10 Upgrading of Corner Cap Dummy Axles - (CosyCot™ models with bassinets prior to version 2.5 only)

Refer to section 7.2.1 for details of the dummy axle change history. It is advised to replace the corner cap bushes (653040121) at the same time as exchanging dummy axles. The side panel sliding axle will need to be upgraded at the same time as the dummy axle to ensure correct operation. Refer to section 7.2.1 for the correct dummy axle and sliding axle combinations.

a. Follow steps a – c in section 3.5.9 to remove the corner cap.
b. Slide out the two dummy axles in each corner cap and remove the urethane bushes with a pair of pliers.
c. Push a bush halfway into the corner cap before inserting the dummy axle. A thin smear of a silicon grease should be applied to each oval axle stem prior to insertion.

3.5.11 Upgrading of Side Panel Sliding Axles

Refer to section 7.2.1 for details of the sliding axle change history. The sliding axles were modified in February 2001 to accept the lengthened dummy axles. All side panels made after this date will work with all versions of dummy axle. If you have an earlier version of the side panels then the sliding axles will need to be changed if they are to be fitted to a new version dummy axle.

a. Remove each side panel from the bassinet
b. Push one of the two sliding axles back to expose the grub screw which retains it. Using a 1.5mm Allen key remove the grub screw and slowly release the sliding axle.

NOTE: The spring force could eject the sliding axle out of the extrusion if it is not securely held.

c. Repeat step b on the other sliding axle and discard both sliding axles.
d. Replace with one of the new sliding axles and use Loctite 272 to secure the grub screw back into the extrusion. Do not wind the grub screw fully in; at least 1mm should be left exposed to ensure the sliding axles are trapped in the slot.
e. Replace the spring and then carefully push the second sliding axle in place and reinstall the grub screw using Loctite 272.

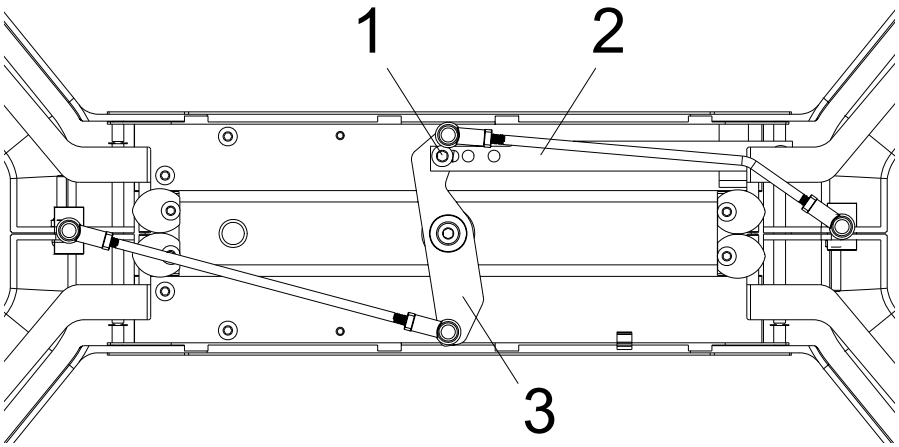
3.6 Service Procedures – Adjustment

3.6.1 Infant Warmer setup procedure for base servicing

a. Disconnect all power and gas from the warmer and remove UPS modules, Side shelves, phototherapy lamps, gas cylinders and any other loose apparatus on the warmer.
b. Push the warmer from the front until the rear castors swivel round underneath the rear legs. Lock the rear castors.
c. Stand behind the column and swing the head over to one side before carefully pulling the warmer column towards you so that the entire warmer pivots on the locked rear castors. Pre-position two chairs or stools in line with the column with one stool close to the base and gently lower the column onto them so that the entire warmer rests on the back of the column and no weight is on the base. Ensure the warmer cannot tip sideways when resting on the chairs/stools.

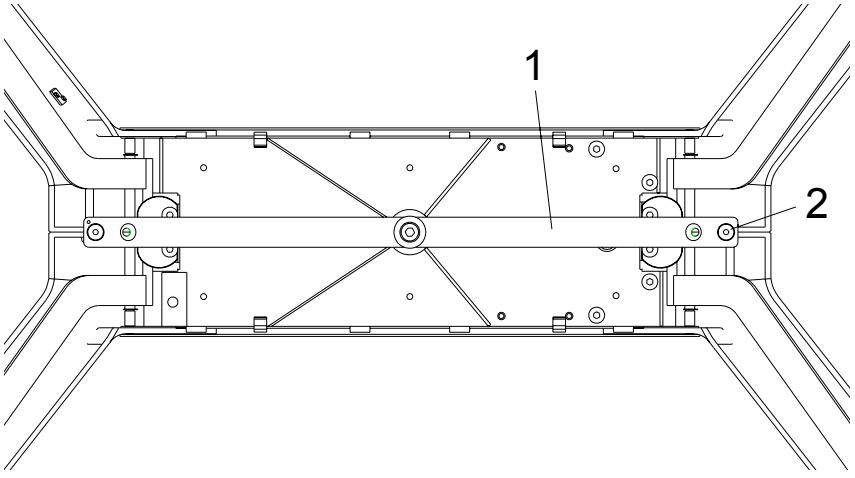
3.6.2 Pre-set Base Height Adjustment (IW93x and IW95x models with preset bases only)

For Warmers Manufactured before February 2004
Preset bases manufactured prior to Feubruary 2004 can have the bassinet height adjusted to 88.4, 97.5 or 101.9 cm (34.8”, 38.4” or 40.1”) by repositioning the lock bar. Refer to Figure 3.6.3 below. Using a 17mm spanner and 6mm Allen key remove the M10 x 30 screw and Nyloc nut (1). Pull both sets of legs together until the desired hole on the lock bar (2) lines up with the hole in the pivot arm (3). Replace the M10 screw and Nyloc nut (1) and fully tighten.



3.6.3 Figure of under side of preset CosyCot™ warmer base Manufactured before February 2004

For Warmers Manufactured after February 2004
Preset bases manufactured after February 2004 can have the bassinet height adjusted to 90.5 or 100.5 cm (35.6”or 39.6”). Refer to Figure 3.6.4 below. Using a 5mm Allen key remove the two M8x25 screws (2). Pull the legs together until the other set of holes on the base adjustment bar (1) line up with the holes on the legs.Replace the M8 screw and fully tighten. There are only two adjustment points for this system.



3.6.4 Figure of underside of preset CosyCot™ Warmer Base Manufactured after February 2004

3.6.5 Base Level Adjustment (IW93x and IW95x models only)

NOTE: Required on warmers with electric elevator bases and preset bases manufactured pre-February 2004. After this date a new preset system means that base level adjustment is not required.

If the base or column are not level, then adjustment of the straight tie rod is required. The straight tie rod is located underneath the base between the centre pivot and the rear legs.

a. Undo the lock nut that secures the straight tie rod to the ball joints.
b. In the middle of the rod is a flat section that should be used for adjustment. Use the 6 mm wrench (part of the tool kit) to turn the rod. One full clockwise turn of the rod (thread M8 x 1.25) will lower the column down by approximately 4 mm. Hence, one full anti-clockwise turn of the rod will lift the column end up by approximately 4 mm.
c. Adjust to level column and base.
d. Tighten the lock nut.

NOTE: When the rod is assembled, the ball joints remaining threaded portions are:
Leg side: 10 mm (full length is 20 mm)
Pivot side: 10 mm (full length is 25 mm)

CAUTION A maximum of four full clockwise turns are allowed (remaining threaded portion 5 mm).

3.6.6 Castor Angle Adjustment (IW93x & IW95x models only prior to serial No. 9795AEA00436)

If the castor is not vertical to the floor, adjustment of the link arms is required. The link arms are located underneath the leg. Castor angle cannot be adjusted on warmers after the above serial number – refer to PART 13: for serial number identification.

a. Undo the lock nuts that secure the straight tie rod to the ball joints.
b. In the middle of the arm are two holes spaced at 90°. Use a 3mm Allen key or a 3mm bar to turn the arm. One full clockwise turn of the arm (thread M10 x 1.5) will move the castor outwards by approximately 3 mm. Hence, one full anti clockwise turn of the arm will move the castor inwards by approximately 3 mm.
c. Adjust the castor to the vertical position.
d. Tighten the lock nuts.

NOTE: When the arm is assembled the remaining threaded portions on both sides are 13 mm (including 8mm thick lock nuts).

CAUTION A maximum of ten full turns clockwise are allowed (thus the remaining threaded portion will be 10 mm).

3.6.7 Bassinet Clutch Adjustment (IW93x, IW95x, IW960 & IW970 models only)

If the bassinet can be tilted without actuating the rear handle, or pulling the two handles together doesn't allow tilting of the bassinet, then the bassinet tilt clutch requires adjustment.

Adjustment is performed with the adjuster screw (for fine alterations) or by moving the cable support block (for coarse alterations).

If Bassinet Clutch is too tight (i.e. bassinet can not be tilted):

a. Loosen lock nut on adjuster screw and wind screw out. If screw is already fully wound out then cable support block will have to be moved.
b. Use a 4mm ball ended Allen key to loosen the two grub screws securing the cable support block to the bassinet frame.

NOTE: On version three bassinets (manufactured from November 2002) a single M8 cap screw has replaced the two grub screws, a 5mm Allen key is required to loosen this screw.

c. Wind the adjuster screw approximately half way out.
d. Butt the adjuster screw against the cable sheath by sliding the cable support block towards the rear of the warmer.
e. Fix the cable support block in position by tightening the two grub screws.
f. Move the bassinet tilt brake handle backwards as far as it will go and wind adjuster screw out to take up tension.
g. Tighten adjuster screw lock nut.
h. Pull the bassinet rear handle forwards and check brake release operation.

If Bassinet Clutch is too loose (i.e. bassinet can be tilted without using the bassinet handles):

a. Loosen lock nut on adjuster screw and wind screw in. If screw is already fully wound in then cable support block will have to be moved.
b. Use a 4mm ball ended Allen key to loosen the two grub screws securing the cable support block to the bassinet frame.

NOTE: On version three bassinets (manufactured from November 2002) a single M8 cap screw has replaced the two grub screws, a 5mm Allen key is required to loosen this screw.

c. Wind the adjuster screw approximately half way in.
d. Follow steps d to h above.

If the clutch is still loose the actuator spring can be tightened. Referring to diagram in section 7.12; using a ball ended 4mm Allen key on the M5 screw (part 15) and a 6mm open spanner on the brass actuator (part 12) tighten the spring by winding the screw in. The 12mm washer (part 16) should coincide with a line on the lower tilt link molding (part 7). Cleaning the tilt brake sliders (part 10) with alcohol to remove any particles can also improve the clutch performance.

3.6.8 Bassinet Brake Adjustment (For CosyCot™'s manufactured after Feb. 2004 with the toothed brake system)

If the bassinet can be tilted without actuating the rear handle, or pulling the two handles together doesn't allow tilting of the bassinet, then the bassinet brake requires adjustment.

Adjustment is performed with the adjuster screw on the cable:

a. Move the bassinet so that the handle is in the lowest position
b. Loosen the lock nut on the adjuster screw.
c. Wind the screw such that there is 2mm of play in the lower handle (winding it out will reduce the play).
d. Tighten the adjuster screw lock nut.

3.7 Recommended Maintenance Checklist

This sheet can be copied and used to keep a record of the maintenance procedures carried out on your Fisher & Paykel Healthcare 900 series Infant Warmer.

Model	IW	Serial number	

	Checks Required	Result	Units	Detail
Mobiles & Wallmounts and Cosycot™s'	**System Checks**			
	Alarm indicator check			
	Power fail alarm check			
	Stuck button check			
	Calibration Check EIN #5			3950 ± 20
	Calibration Check EIN #4			value within ± 5 of calculated percentage
	Light check			
	Power mode check			
	Timer mode check			
	Heater control			No heat ☐ 100% heat ☐ Segments ☐
	Temperature measurement check		^{O}C	± 0.2^{O}C of test water temperature
	Warmer calibration test using check probe (if available)		^{O}C	36.7^{O}C ± 0.1^{O}C
	Functional Checks			
	Head pivot securing nut check			
	Security of stabiliser weight bolt (mobile only)			Spring washer fully deformed
Cosycot™s'	Security of column bolts		Nm	9.5-11.0 Nm
	Electric elevator check			
	Arm pivot actuator check			No bending evident
	Bassinet mounting check			
	Transport handle check (as fitted)			
	Storage drawer check (as fitted)			
	Storage bins check (as fitted)			
	Gas Supply Module regulator output pressure OXYGEN		psi	50-60 psi
	Gas Supply Module regulator Output AIR		psi	50-60 psi
	Gas Supply Module leak check OXYGEN			No cylinder gauge movement in 15 mins
	Gas Supply Module leak check AIR			No cylinder gauge movement in 15 mins
	Other low pressure gas accessories leak check		psi	< 4 psi in 15 minutes
	Gas Hoses			
	Flowmeters accuracy - test flowmeter at 8 LPM		LPM	7.5 - 8.5 LPM
	Suction check			Refer to suction device documentation
	Neopuff™ manometer accuracy - test gauge at 10 cmH_2O		cmH_2O	8-12 cmH_2O
	Neopuff™ manometer accuracy - test gauge at 20 cmH_2O		cmH_2O	18-22 cmH_2O
	Neopuff™ manometer accuracy - test gauge at 40 cmH_2O		cmH_2O	38-42 cmH_2O
	Neopuff™ maximum pressure at 5 LPM		cmH_2O	> 65 cmH_2O
	Neopuff™ maximum pressure at 15 LPM		cmH_2O	< 80 cmH_2O
	Neopuff™ smooth needle movement on operation of valves?			
	UPS battery check			Refer to UPS documentation
	UPS run time check		mins	> 10mins
	Phototherapy lamp output check			Refer to phototherapy lamp documentation
	Low flow microblender checks			Refer to microblender documentation
All	**Electrical Safety**			
	Earth resistance			As per country standard
	Earth leakage			As per country standard
	Patient applied path			As per country standard
	Other tests as required			As per country standard

Technician	
Technician Signature	
Date	

PART 4: Cleaning – Before you begin

WARNING

To avoid the possibility of burns when performing cleaning procedures, ensure the warmer is disconnected from the power supply and the heater element is allowed to cool for one hour.

To avoid the possibility of electric shock hazard when performing cleaning procedures, ensure the warmer is disconnected from the power supply.

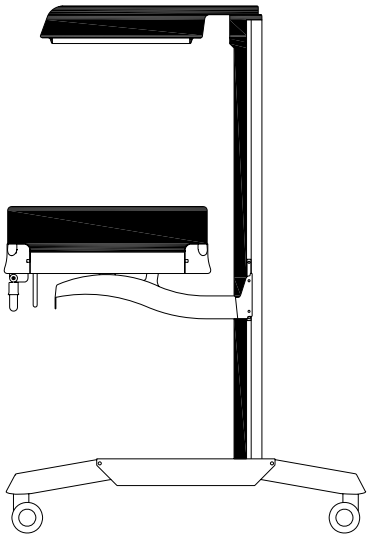
If a UPS is installed ensure it is turned off prior to cleaning. Do not remove the UPS shroud during cleaning procedures. Ensure no part of the UPS is immersed in any cleaning agent.

Do not allow liquids to seep into electrical housings.

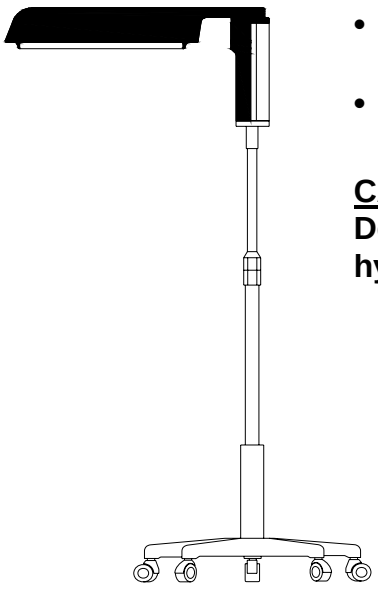
Do not allow liquids to collect or enter into any oxygen or air fittings or inlets.

Ensure all oxygen and air supplies are turned off and disconnected from the CosyCot™ before performing cleaning procedures. Explosion and fire hazards can exist when performing cleaning procedures in an oxygen-enriched environment.

4.1 General Cleaning



- Always follow hospital and local guidelines for cleaning frequencies. Clean the warmer and accessories either weekly or between babies using the following cleaning procedures:
- Before cleaning, remove and discard all used disposable products using the recommended method of disposal.
- Dust all plastic surfaces with a clean damp soft cloth.
- Dust all accessible metal surfaces with a clean soft cloth or paper towel.
- Clean all plastic surfaces with detergent based solution (maximum 2% in water) ensuring the manufacturer's directions for use of the cleaning agent are followed.
- Alcohol may be used to clean plastic surfaces **except for those highlighted black** in the diagrams. These contain plastic components made from polycarbonate or acrylic. This includes the entire head assembly, the side panels, the column cap, front panel fascias.
- Ensure no part of the warmer or accessories are immersed in any cleaning agent.
- Apply the cleaning solution with a clean cloth or sponge.
- Clean all parts of the warmer and accessories at ambient conditions. Allow heated surfaces to cool before cleaning for at least 1 hour.
- Dry all surfaces after cleaning with a clean soft cloth or paper towel.



CAUTION

Do not use any compounds containing aromatic hydrocarbons, ammonia, amines or alkaline solutions.

Chemicals that Attack Polycarbonate

Strong Bases	**Ammonium Hydroxide, Sodium Hydroxide, Potassium Hydroxide**
Halogenated Solvents	**Methylene Chloride, Chloroform, Carbon Tetra Chloride**
Ketones	**Acetone, Acetonitrile, Ethyl Acetate, Methyl Ethyl Ketone (MEK)**
Aromatic Hydrocarbons	**Benzene**

CAUTION

- If your cleaning solution contains any of these compounds then it should not be used on polycarbonate plastics.
- Do not clean the radiant heating element.
- Do not allow excess cleaning solution to seep in between plastic parts where it is difficult to wipe away.

4.1.1 Skin Sensor

Clean the skin sensor with alcohol, or detergent or soap solution (maximum 2%) in water), ensuring the manufacturer's directions for use of the cleaning agent are followed.

Apply the cleaning solution with a clean cloth or sponge, and dry all surfaces after cleaning with a clean soft cloth or paper towel.

CAUTION

- Do not autoclave or gas sterilise the skin sensor.
- Do not pull on the sensor cup or sensor plug during cleaning or drying as the skin sensor may be damaged.
- Ensure the skin sensor is only removed from the controller by grasping the plug at the front panel. Ensure excessive strain is not placed on the sensor lead either during use, cleaning or inspection.

4.1.2 Mattress

Clean the mattress with an approved and correctly diluted disinfectant-detergent solution, ensuring the manufacturer's directions for use of the cleaning agent are followed.

Apply the cleaning solution with a clean cloth or sponge, and dry all surfaces after cleaning with a clean soft cloth or paper towel.

CAUTION
Do not autoclave the mattress.

4.1.3 Cleaning Products

CAUTION

- Do not use solvents or abrasive cleaning solutions for cleaning surfaces of the warmer.
- Do not expose plastic and acrylic surfaces to direct radiation from germicidal lamps. The ultraviolet radiation from these sources can cause crazing and cracking.

4.1.4 After cleaning

CAUTION

- Ensure all warmer parts and accessories are checked before returning the device to service.

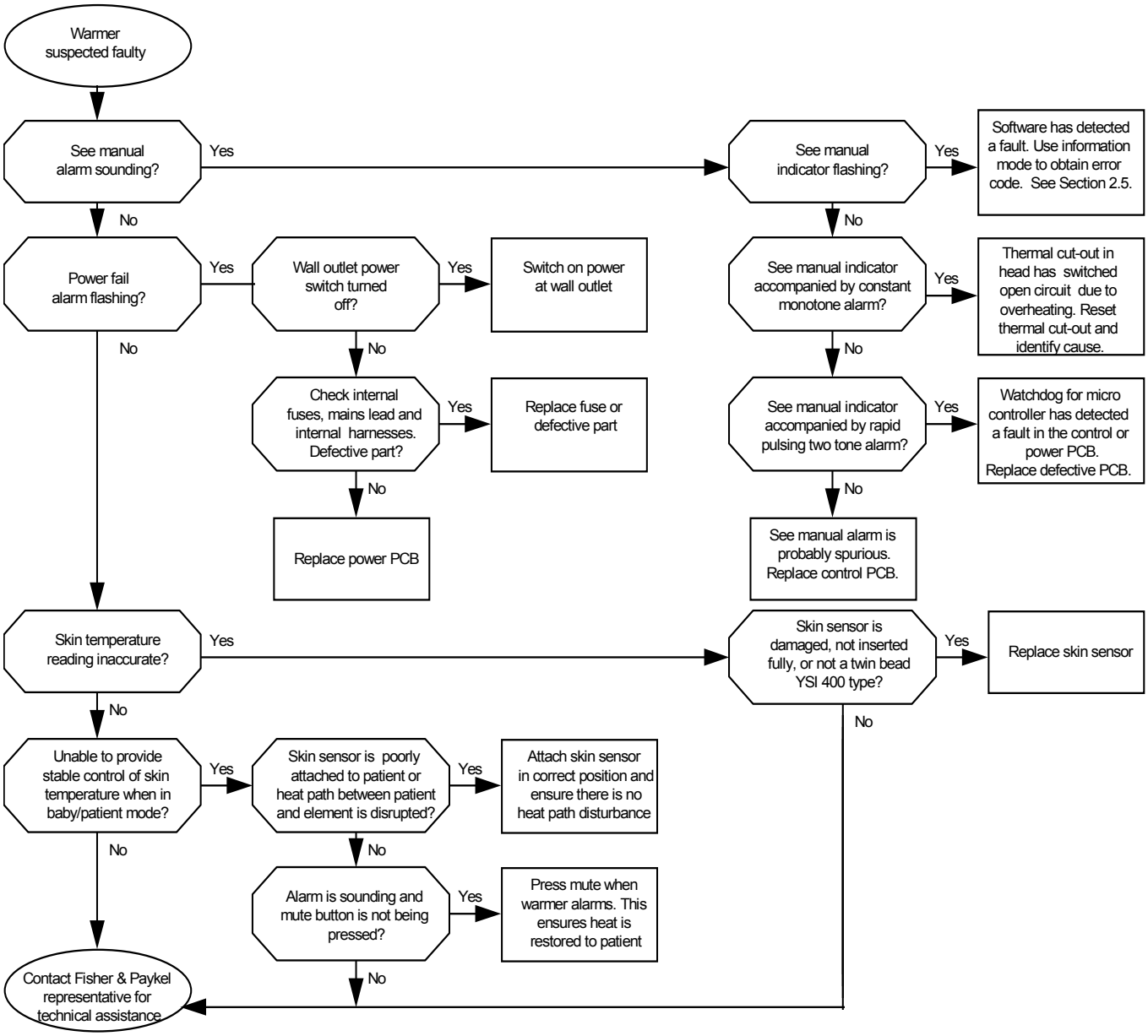
4.1.5 Sterilisation

CAUTION

- Do not autoclave or gas sterilise any part of the warmer
- For cold sterilisation: Ensure the cold sterilisation agents are safe for use with the relevant warmer surfaces.
- For chemical liquid immersion: Some chemicals can be harmful to plastics.

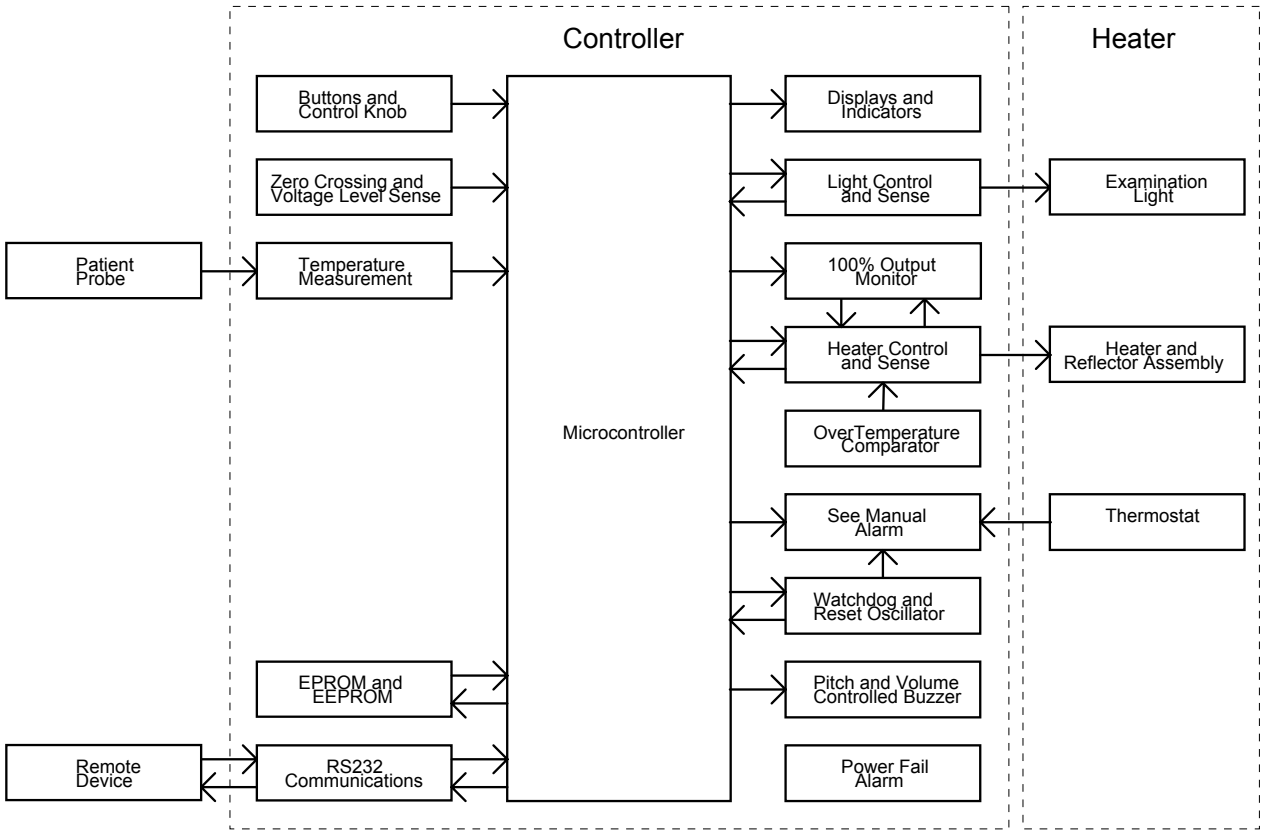
PART 5: IW900 Series Electronics

5.1 Troubleshooting Flow Chart



5.2 Circuit Overview

Figure 6.2 gives an overview of the IW900 series controller electronics. The location of major components and connectors on the PCB's are shown in Section 5.4. Full schematics are given in Section 5.5.



5.2.1 IW900 Series Controller Overview

The controller electronics are mounted behind the front control panel on two printed circuit boards (PCBs) - the Control PCB and the Power PCB (see section 5.4 for PCB component photos):

POWER PCB

The power PCB provides power supply and I/O lines necessary for sense and control of the examination light and heating element. It holds the mains voltage parts and incorporates a heat sink. The power PCB is connected to the control PCB by a single 14-way ribbon cable (J3). Also connected to the Power PCB are the power transformer (J10 and J9), the heater, light and thermal cut-out harness (J7 and J8), the power switch (J13 and J6) and the mains input terminals (J5).

CONTROL PCB

The control PCB is based around the Phillip's 80C552 micro-controller. It provides a user interface, temperature measurement and intelligent control of the element power. Almost all of the warmer functions are implemented in software. The control PCB is connected to the Power PCB (J1), the skin sensor socket (J2) and the serial communications port (J12).

5.3 Circuit Description

5.3.1 Software Independent Safety Circuits

Five safety features are included which function independently of the micro-controller. These safety features are provided in addition to the safety features already provided by the micro-controller software.

OVER TEMPERATURE COMPARATOR

A comparator (U12B) is used to disable heat in the element if a skin temperature exceeding 39.5°C is detected (see Performance Check Procedure in Section 3.3). Under normal conditions the software will not allow this to happen because a high temperature alarm condition will exist and the power will be reduced to 0%. If a fault prevents the software alarm from occurring then this comparator will stop the micro-controller from applying power to the heater element. The micro-controller will then cause a See Manual alarm with error code 17 because it will sense that it can no longer control the heater.

100% OUTPUT MONITOR

A counter circuit (U13) is used to detect when uncontrolled mains voltage is applied to the heating element. It does this by counting how many continuous mains pulses are supplied to the element. If this count exceeds a threshold value then relays RL2 and RL3 will open thereby disconnecting the element from the mains supply. Under normal conditions the software will not allow this to happen. If this circuit detects continuous full power in the element and opens the relays then the software will detect it is unable to control the element power and will show a See Manual alarm with error code 17.

WATCHDOG & RESET OSCILLATOR

An external hardware watchdog is included which monitors activity of the micro-controller. If the micro-controller is not regularly toggling the watchdog pin, then a See Manual alarm will be started (see Section 2.4) and the micro-controller will be reset. Power to the element will be disabled.

OVERHEAT THERMAL CUT-OUT

Thermal cut-out (rated at 150°C) is fitted in the heater which will cause power to be removed from the element in the event of overheating (within the heater). If this thermal cut-out is tripped then relays RL2 and RL3 will open thereby disconnecting the element from the mains supply and a See Manual alarm will result (see Section 2.4).

POWER FAIL ALARM

The energy stored in the super capacitor C22 provides up to 10 minutes of pulsing alarm in the event that power fails while the unit is switched on. The alarm sounds self-oscillating buzzer PZ2 and flashes the power fail LED.

5.3.2 Software Controlled Circuits

The remaining circuit components are used in conjunction with the micro-controller software:

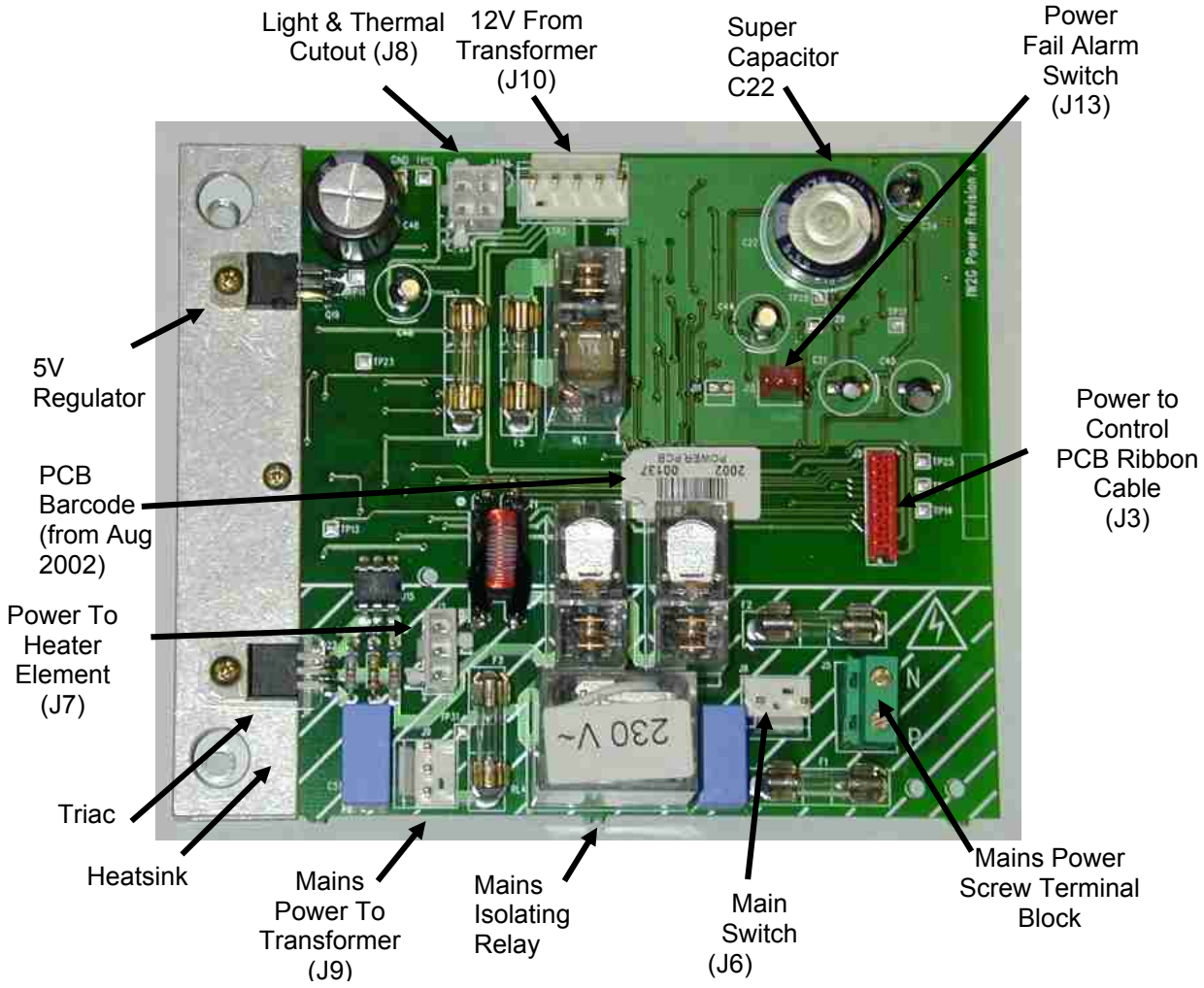
MICRO-CONTROLLER	U4 is a Phillip's 80C552 which controls most aspects of the warmer.
PROM AND EEPROM	U8 contains the micro-controller software and many non-volatile presets are contained in U7. U7 can only be serviced by the manufacturer because it contains factory preset information.
RS232 COMMUNICATIONS	U6 provides an RS232 interface with the micro-controller. This is used for manufacturing purposes only.
BUTTONS & CONTROL KNOB	All user input is via the buttons or the control knob. The encoder SW11 has a two-wire quadrature output that allows the micro-controller to sense movement and direction. U2 and U3 multiplex the buttons into a single line that is used as an input by the micro-controller.
DISPLAYS & INDICATORS	U1 drives the displays and indicators which are configured in four banks. A single line from U1 is used as feedback to the micro-controller (test point TP9).
LIGHT CONTROL & SENSE	Relay RL1 controls the examination light and U16 provides feedback on the state of the light to the micro-controller.
HEATER CONTROL & SENSE	Triac Q22 controls the power to the element. It is opto-isolated with U15. Relays RL2 and RL3 allow the 100% MONITOR circuit and the WATCHDOG circuit to remove power from the element if a fault is detected. Current pulses in the element are sensed via coil T1 (test point TP15).
PITCH & VOLUME CONTROL BUZZER	U19 provides pitch and volume control over buzzer PZ1 which plays all alarm and acknowledge sounds.
ZERO CROSSING & LINE LEVEL SENSE	The mains voltage is monitored by a secondary winding from the power transformer. Comparator U14E detects zero crossings and a waveform is derived (found at test point TP14) which exhibits a momentary negative going pulse on each zero crossing. A DC voltage proportional to line voltage level is detectable at TP8.

5.4 PCB Component Locations

The photographs below identify some of the major components used on the IW900 series of Infant Radiant Warmers and where they are located.

5.4.1 Power PCB Board

NOTE: These are voltage specific with the voltage identified by a label on the mains isolating relay.



The spare parts numbers for the Power PCB boards are listed below:

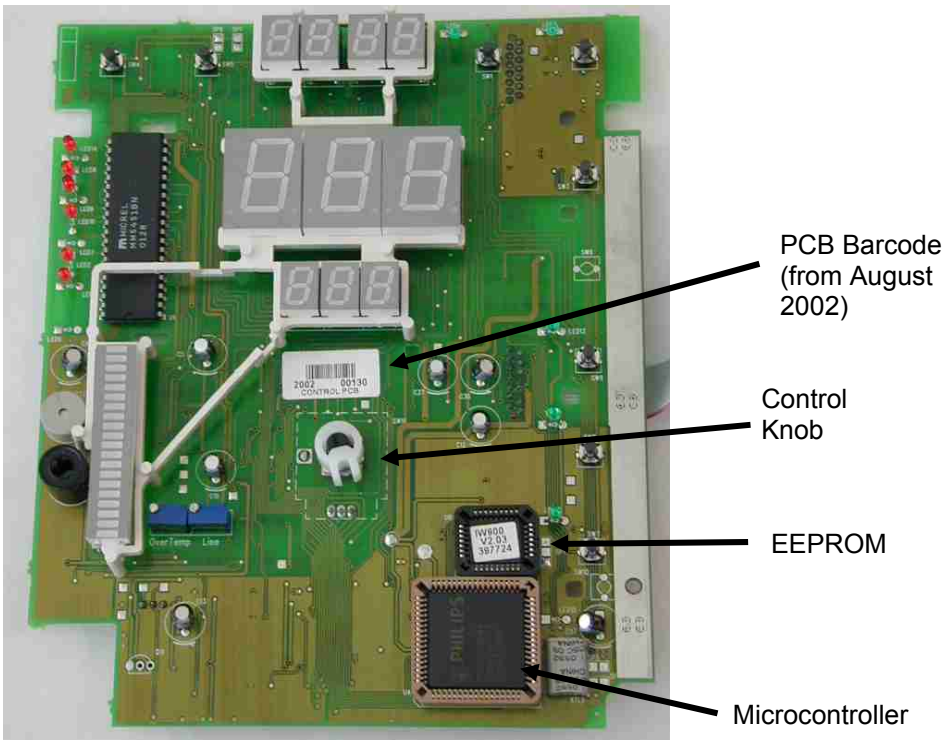
043041005	PCB Assy Power IW900 100V
043041004	PCB Assy Power IW900 120V
043041003	PCB Assy Power IW900 230V
311040682	SuperCap 1F 5.5V HT
999830009	Fuse 2A 250V fast blow 20x5mm (F3 and F4 for all models)
348060023	Fuse 8A 250V fast blow 20x5mm F5 for all models, F1 and F2 for 100V/120V models)
348060022	Fuse 4A 250V fast blow 20x5mm (F1 and F2 for 230V models)

NOTE: 20x5mm fast blow fuses are available from standard electrical suppliers. The correct replacement fuses are listed on the label inside the front panel.

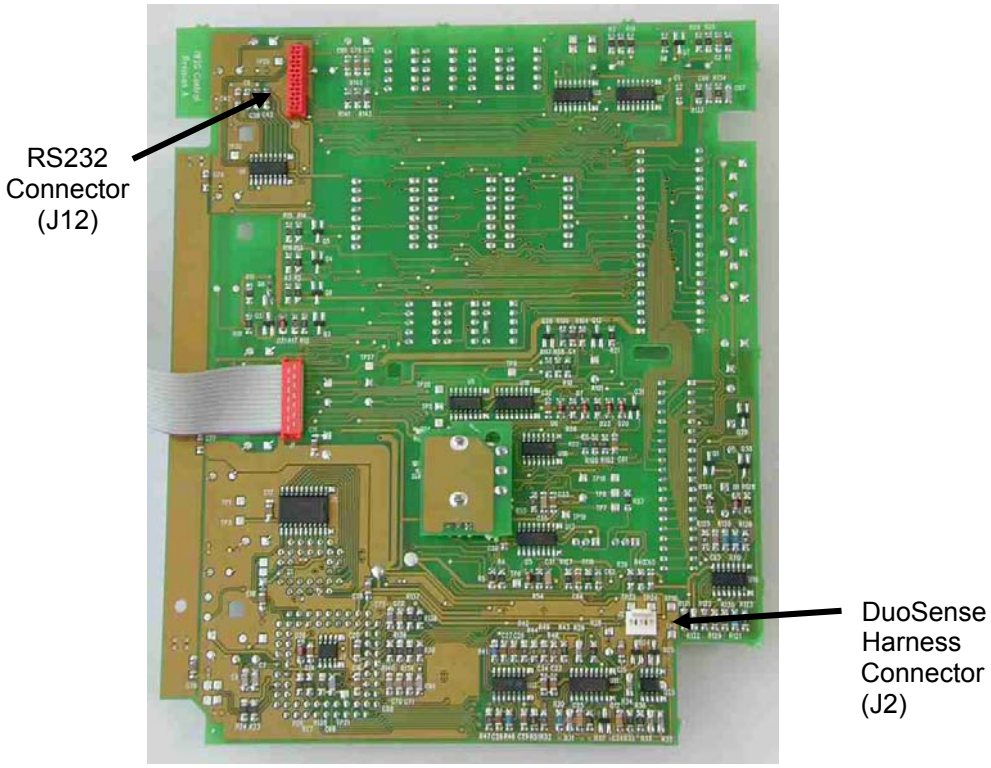
5.4.2 Control PCB Board

There are two different control PCBs depending on whether you have a Servo (Baby) controlled warmer or a Manual warmer. The spare part numbers for ordering new Control PCB boards are:

For IW910, IW93x, IW960 and IW980 Servo controlled warmers:	043041041 PCB Assy Control IW900 Servo
For IW920, IW95x, IW970 and IW990 manual controlled warmers:	043041002 PCB Assy Control IW900 Manual



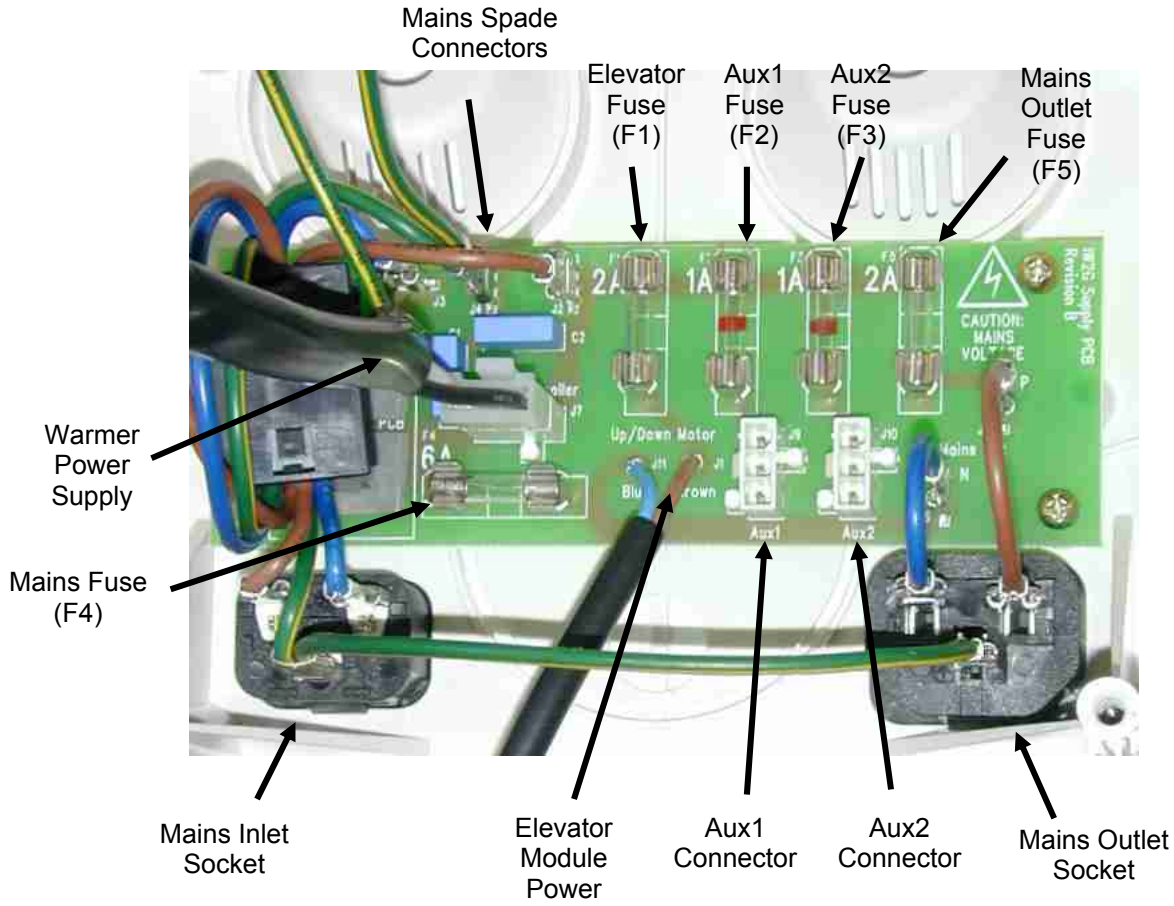
Front View of IW900 Series Control PCB Board



Rear View of IW900 Series Control PCB Board

5.4.3 Power Supply PCB Board

This PCB is only used on IW93x, IW95x, IW960 and IW970 CosyCot™ warmers and is located in the lowest module of the column. It is not voltage specific.

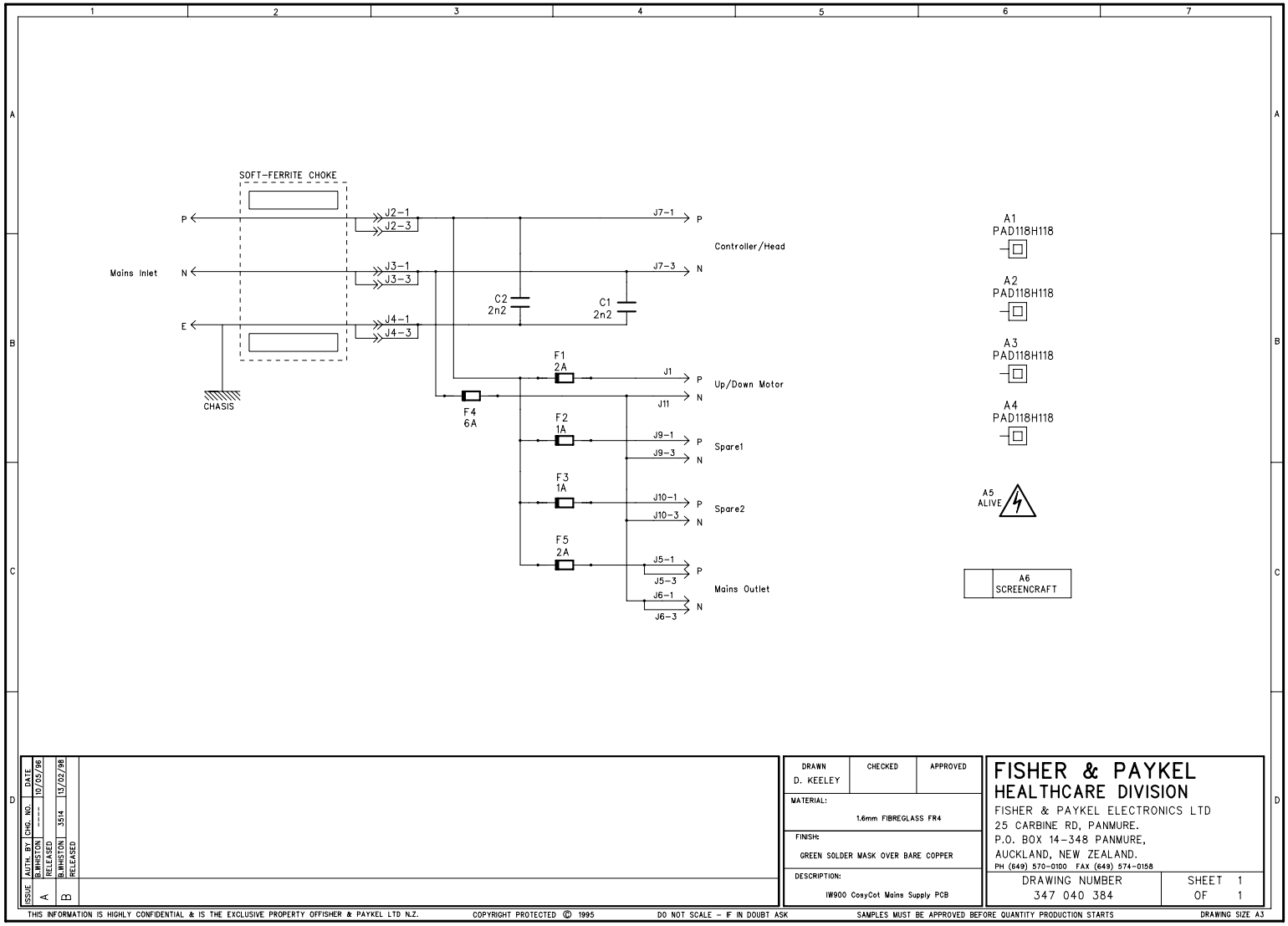


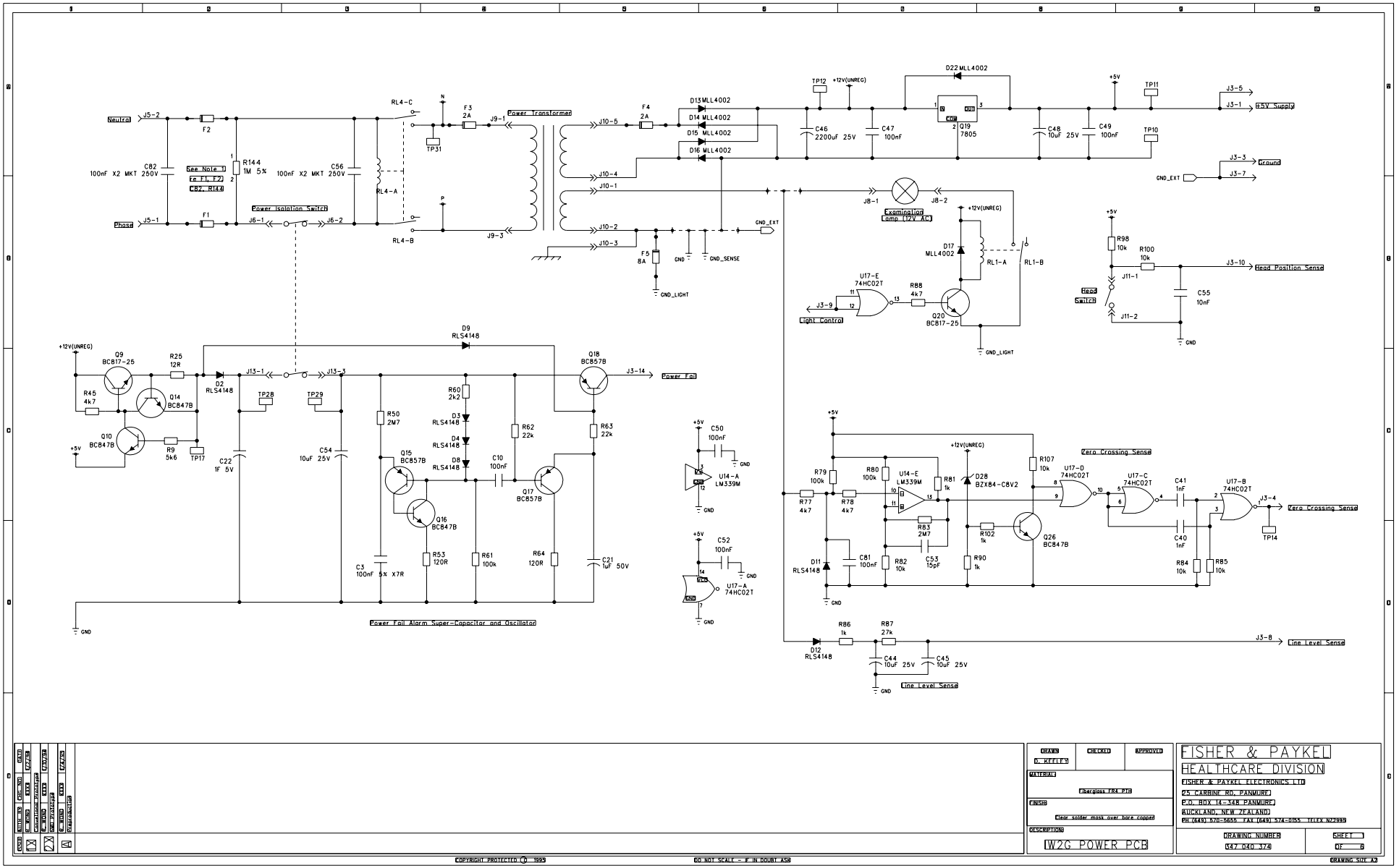
The spare parts numbers for the power supply PCB board are listed below:

043041137	PCB Power Supply CosyCot™ Spare
999830001	Fuse 1A 250V fast blow 20x5mm (F2 and F3 for all models)
999830009	Fuse 2A 250V fast blow 20x5mm (F1 and F5 for all models)
348060027	Fuse 6A 250V fast blow 20x5mm (F4 for all models)

NOTE: 20x5mm fast blow fuses are available from standard electrical suppliers. The correct replacement fuses are listed on the label inside the front panel.

5.5 Circuit Schematics




Neutral
Phase
J5-2
J5-1
F2
F1
C82
100nF X2 MKT 250V
See Note 1
(e.F1, F2)
CB2, RT44
R144
1M 5%
C56
100nF X2 MKT 250V
RL4-C
RL4-A
RL4-B
Power Isolation Switch
J6-1
J6-2
N
P
TP31
F3
2A
J9-1
J9-3
Power Transformer
J10-5
J10-4
J10-1
J10-2
J10-3
F4
2A
F5
8A
GND
GND_SENSE
GND_LIGHT
GND_EXT
D13 MLL4002
D14 MLL4002
D15 MLL4002
D16 MLL4002
D22 MLL4002
TP12
+12V(UNREG)
C46
2200uF 25V
C47
100nF
Q19
7805
C48
10uF 25V
C49
100nF
+5V
TP11
TP10
J3-5
J3-1
5V Supply
J3-3
Ground
J3-7
J8-1
J8-2
Examination
Lamp (12V AC)
D17
MLL4002
RL1-A
RL1-B
U17-E
74HC02T
J3-9
Light Control
R88
4k7
Q20
BC817-25
R98
10k
R100
10k
J3-10
Head Position Sense
J11-1
J11-2
Head
Switch
C55
10nF
D9
RLS4148
+12V(UNREG)
Q9
BC817-25
R25
12R
D2
RLS4148
R45
4k7
Q14
BC847B
Q10
BC847B
+5V
R9
5k6
TP17
C22
1F 5V
TP28
TP29
J13-1
J13-3
C54
10uF 25V
R50
2M7
R60
2k2
D3
RLS4148
D4
RLS4148
D8
RLS4148
Q15
BC857B
Q16
BC847B
C3
100nF 5% X7R
R53
120R
R61
100k
R64
120R
C10
100nF
Q17
BC857B
R62
22k
R63
22k
Q18
BC857B
J3-14
Power Fail
C21
1uF 50V
Power Fail Alarm Super-Capacitor and Oscillator
C50
100nF
U14-A
LM339M
C52
100nF
U17-A
74HC02T
Zero Crossing Sense
R79
100k
R77
4k7
R80
100k
R78
4k7
U14-E
LM339M
R81
1k
D28
BZX84-C8V2
R107
10k
U17-D
74HC02T
U17-C
74HC02T
C41
1nF
U17-B
74HC02T
J3-4
TP14
C40
1nF
R84
10k
R85
10k
R83
2M7
C53
15pF
R102
1k
Q26
BC847B
R90
1k
D11
RLS4148
C81
100nF
R82
10k
R86
1k
R87
27k
D12
RLS4148
C44
10uF 25V
C45
10uF 25V
Line Level Sense
J3-8
DRAWN
D. KEELEY
CHECKED
APPROVED
MATERIAL
Fiberglass FR4 PTH
FINISH
Clear solder mask over bare copper
DESCRIPTION
W2G POWER PCB
FISHER & PAYKEL
HEALTHCARE DIVISION
FISHER & PAYKEL ELECTRONICS LTD
25 CARBINE RD, PANMURE
P.O. BOX 14-348 PANMURE
AUCKLAND, NEW ZEALAND
PH (649) 570-5655 FAX (649) 574-0155 TELEX NZ2999
DRAWING NUMBER
547 040 374
SHEET
OF 8
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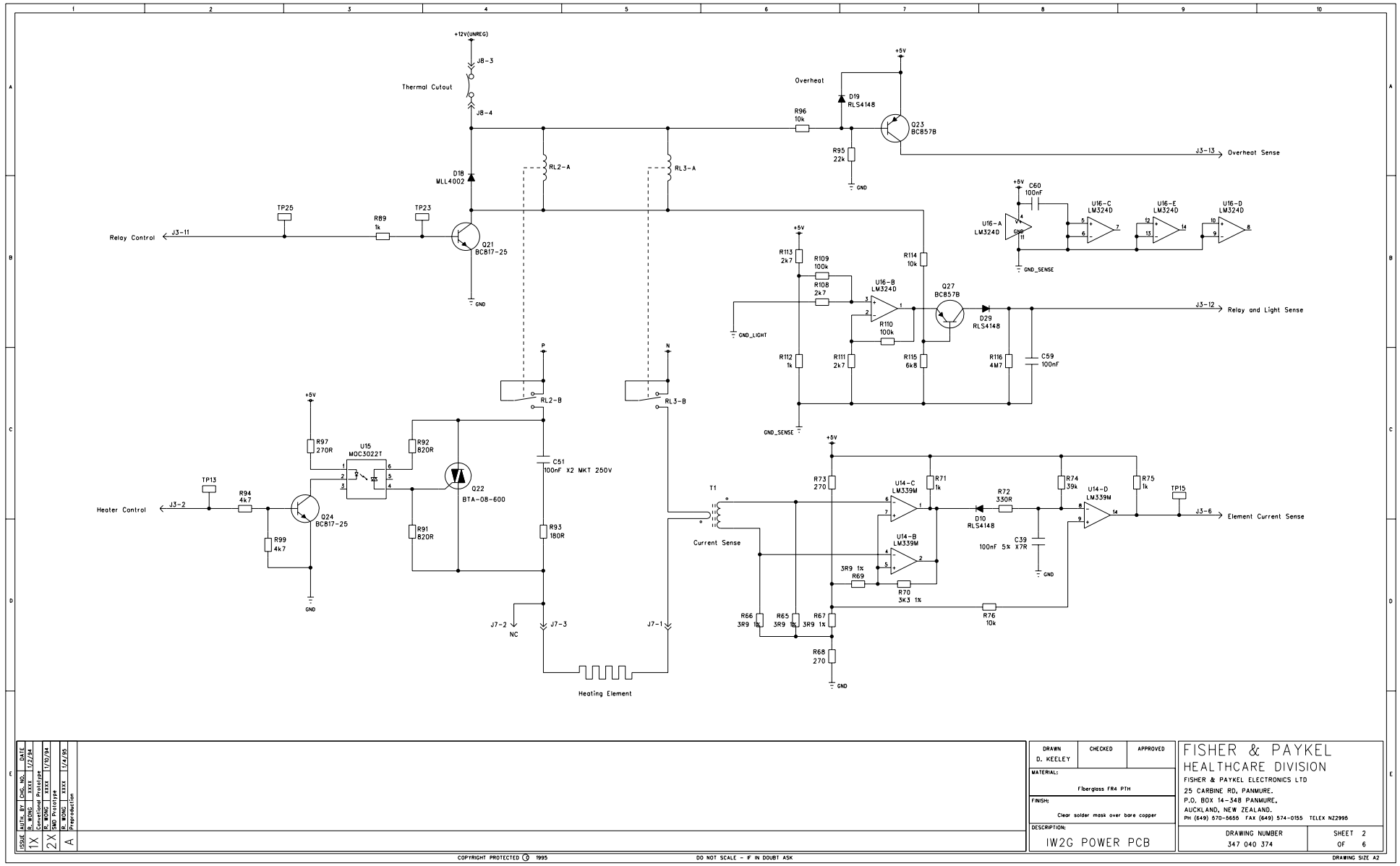
DRAWING SIZE A3



ISSUE	AUTH. BY	CHG. NO.	DATE
1X	D. WONG	XXXX	1/2/94
	Conceptional Prototype		
2X	D. WONG	XXXX	1/10/94
	Pre-Production Prototype		
A	D. WONG	XXXX	1/4/95
	Preproduction		

DRAWN	CHECKED	APPROVED
D. KEELEY		

MATERIAL: Fiberglass FR4 PTH

FINISH: Clear solder mask over bare copper

DESCRIPTION: IW2G POWER PCB

FISHER & PAYKEL
HEALTHCARE DIVISION
FISHER & PAYKEL ELECTRONICS LTD
25 CARBINE RD, PANMURE.
P.O. BOX 14-348 PANMURE,
AUCKLAND, NEW ZEALAND.
PH (649) 570-5655 FAX (649) 574-0155 TELEX NZ2995

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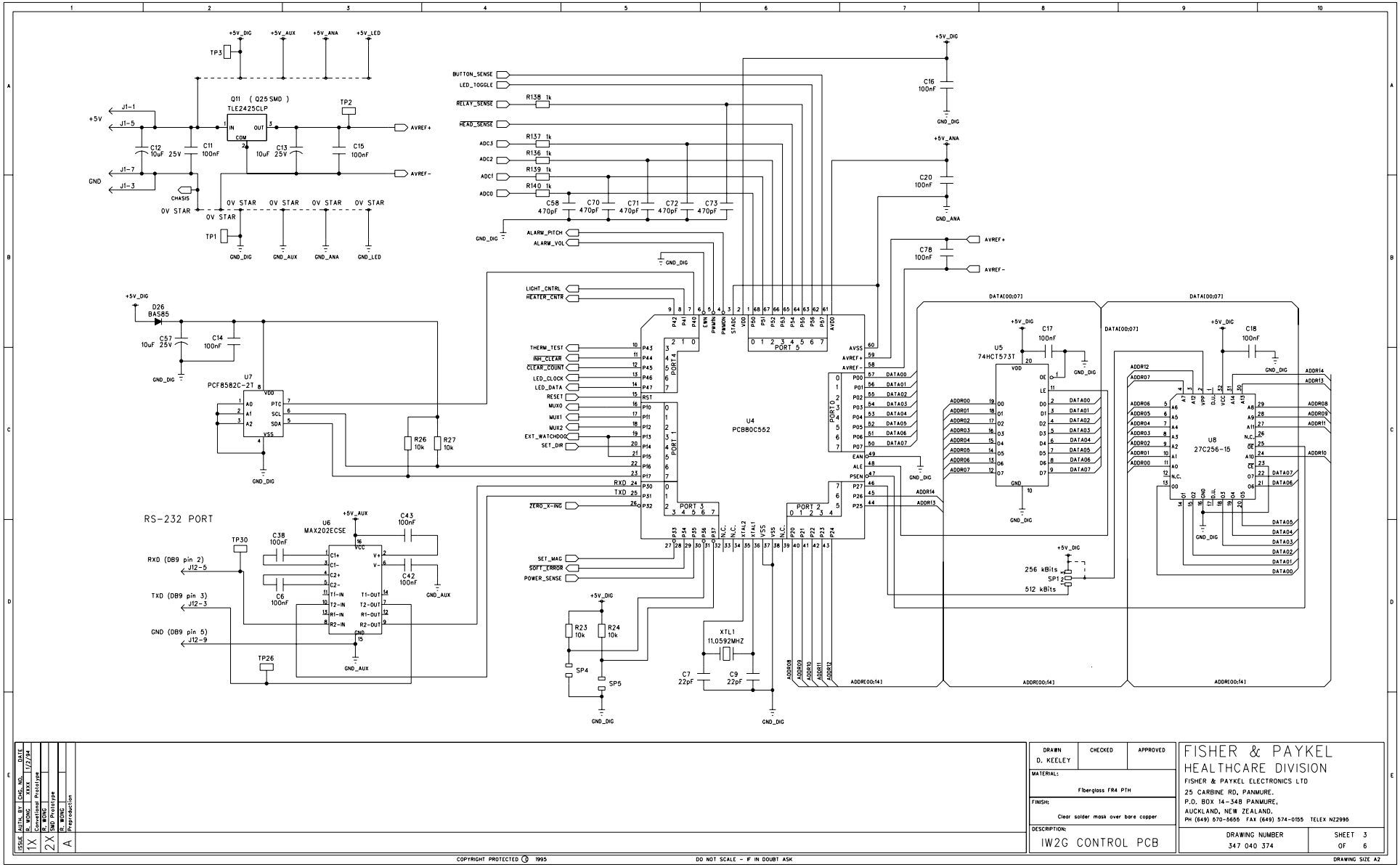
DO NOT SCALE - IF IN DOUBT ASK
DRAWING SIZE A2



ISSUE	DATA BY	DWG. NO.	DATE
1X	R. MONG	XXXX	1/2/94
	Conceptual Prototype		
2X	R. MONG		
	SMD Prototype		
A	R. MONG		
	Preproduction		

DRAWN	CHECKED	APPROVED
D. KEELEY		

MATERIAL: Fiberglass FR4 PTH

FINISH: Clear solder mask over bare copper

DESCRIPTION: IW2G CONTROL PCB

FISHER & PAYKEL
HEALTHCARE DIVISION
FISHER & PAYKEL ELECTRONICS LTD
25 CARBINE RD, PANMURE.
P.O. BOX 14-348 PANMURE,
AUCKLAND, NEW ZEALAND.
PH (649) 570-5555 FAX (649) 574-0155 TELEX NZ2995

DRAWING NUMBER 347 040 374 | SHEET 3 OF 6

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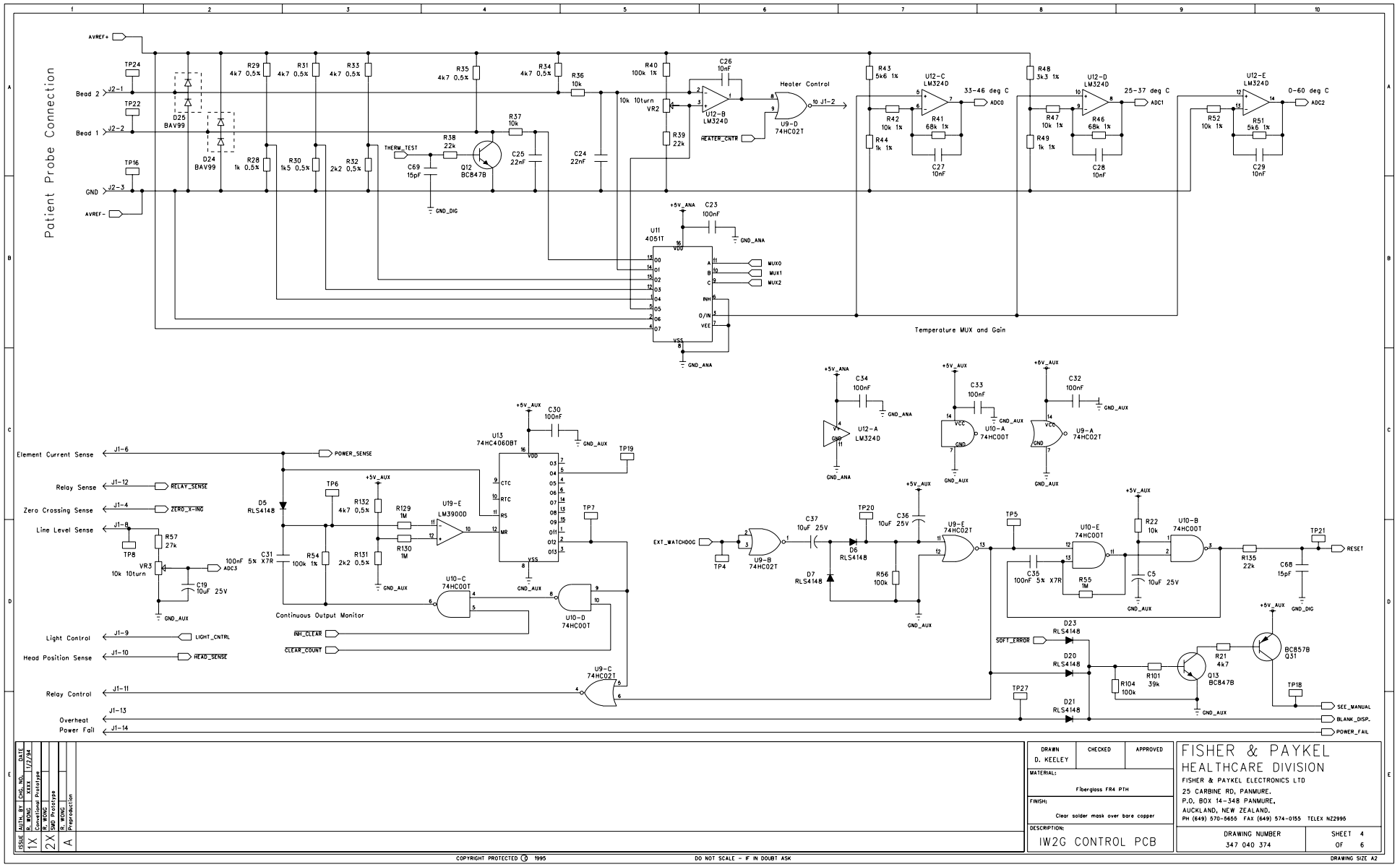
DRAWING SIZE A2


Patient Probe Connection
Temperature MUX and Gain
Continuous Output Monitor
Element Current Sense
Relay Sense
Zero Crossing Sense
Line Level Sense
Light Control
Head Position Sense
Relay Control
Overheat
Power Fail
DRAWN D. KEELEY
CHECKED
APPROVED
MATERIAL: Fiberglass FR4 PTH
FINISH: Clear solder mask over bare copper
DESCRIPTION: IW2G CONTROL PCB
FISHER & PAYKEL HEALTHCARE DIVISION
FISHER & PAYKEL ELECTRONICS LTD
25 CARBINE RD, PANMURE.
P.O. BOX 14-348 PANMURE,
AUCKLAND, NEW ZEALAND.
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DRAWING NUMBER 347 040 374
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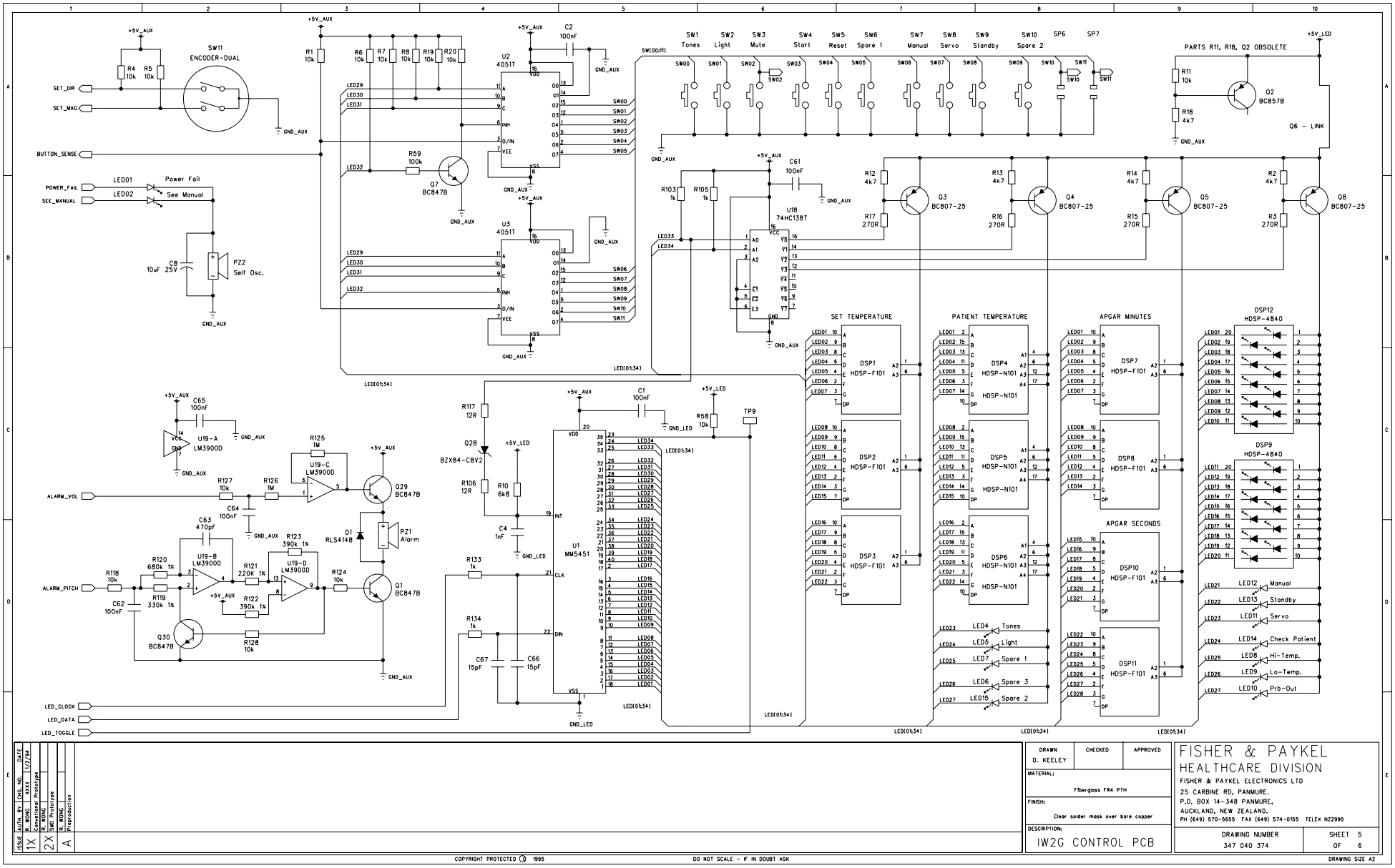
DRAWING SIZE A2


SW11 ENCODER-DUAL
SET_DIR
SET_MAG
BUTTON_SENSE
SW1 Tones
SW2 Light
SW3 Mute
SW4 Start
SW5 Reset
SW6 Spare 1
SW7 Manual
SW8 Servo
SW9 Standby
SW10 Spare 2
SP6
SP7
PARTS R11, R18, Q2 OBSOLETE
Q6 - LINK
LED01 Power Fail
LED02 See Manual
POWER_FAIL
SEE_MANUAL
PZ2 Self Osc.
U2 4051T
U3 4051T
U18 74HC138T
Q7 BC847B
Q2 BC857B
Q3 BC807-25
Q4 BC807-25
Q5 BC807-25
Q8 BC807-25
SET TEMPERATURE
PATIENT TEMPERATURE
APGAR MINUTES
APGAR SECONDS
DSP1 HDSP-F101
DSP2 HDSP-F101
DSP3 HDSP-F101
DSP4 HDSP-N101
DSP5 HDSP-N101
DSP6 HDSP-N101
DSP7 HDSP-F101
DSP8 HDSP-F101
DSP10 HDSP-F101
DSP11 HDSP-F101
DSP12 HDSP-4840
DSP9 HDSP-4840
LED04 Tones
LED05 Light
LED07 Spare 1
LED06 Spare 3
LED15 Spare 2
LED12 Manual
LED13 Standby
LED11 Servo
LED14 Check Patient
LED08 Hi-Temp.
LED09 Lo-Temp.
LED10 Prb-Out
U19-A LM3900D
U19-C LM3900D
U19-B LM3900D
U19-D LM3900D
Q28 BZX84-C8V2
Q29 BC847B
Q1 BC847B
Q30 BC847B
D1 RLS4148
PZ1 Alarm
U1 MM5451
ALARM_VOL
ALARM_PITCH
LED_CLOCK
LED_DATA
LED_TOGGLE
DRAWN D. KEELEY
CHECKED
APPROVED
MATERIAL: Fiberglass FR4 PTH
FINISH: Clear solder mask over bare copper
DESCRIPTION: IW2G CONTROL PCB
FISHER & PAYKEL HEALTHCARE DIVISION
FISHER & PAYKEL ELECTRONICS LTD
25 CARBINE RD, PANMURE.
P.O. BOX 14-348 PANMURE,
AUCKLAND, NEW ZEALAND.
PH (649) 570-5655 FAX (649) 574-0155 TELEX NZ2995
DRAWING NUMBER 347 040 374
SHEET 5 OF 6
ISSUE A Conditional Prototype 1X
B SMD Prototype 2X
C Preproduction A
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DRAWING SIZE A2

MISCELLANEOUS PARTS FOUND ON THE PCB THAT HAVE NO ELECTRICAL FUNCTION

Panasert Location Holes

A6
PAD-PANA

A7
PAD-PANA

ScreenCraft Router Location Holes

A1
PAD 98 THOU DIA. 125 THOU HOLE (pin locating hole 1/8")

A2
PAD 98 THOU DIA. 125 THOU HOLE (pin locating hole 1/8")

Panasert Fiducials

A3
PAD - FIDUCIAL (FOR SMT MACHINE)

A4
PAD - FIDUCIAL (FOR SMT MACHINE)

A5
PAD - FIDUCIAL (FOR SMT MACHINE)

Wave Solder Test Shape

A8
SOLDER-TEST

Star Point Cover Pads

A10
PAD138H51

A11
PAD138H51

A12
PAD138H51

A13
PAD138H51

Heat Sink Mounting Hole

A9
PAD138H91

T1 Power Board Location Hole

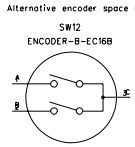
A16
PAD 98 THOU DIA. 125 THOU HOLE (pin locating hole 1/8")

Mains Cable Restraint Holes

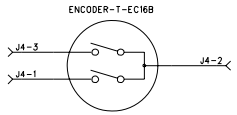
A14
PAD 98 THOU DIA. 125 THOU HOLE (pin locating hole 1/8")

A15
PAD 98 THOU DIA. 125 THOU HOLE (pin locating hole 1/8")

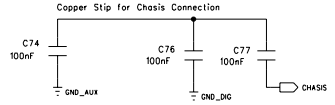
Alternative encoder space holder



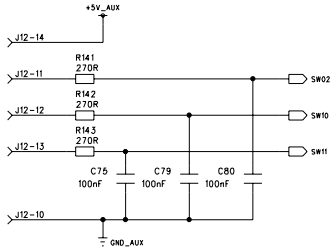
Additional small PCB to adapt for alternative encoder



Coupling capacitors for fast transients to copper strip



Unused filters for remote buttons



Screencraft symbol and UL logo

A17
SCREENCRAFT

A18
SCREENCRAFT

Mains live symbol

A19
ALIVE

ISSUE	AUTH. BY	CHG. NO.	DATE
1X	R. WONG	Original Issue	1/12/94
2X	R. WONG	SMD Prototype	
A	R. WONG	Preproduction	

DRAWN	CHECKED	APPROVED
D. KEELEY		

MATERIAL: Fiberglass FR4 PTH

FINISH: Clear solder mask over bare copper

DESCRIPTION: IW2G NON-ELECTRICAL

FISHER & PAYKEL
HEALTHCARE DIVISION
FISHER & PAYKEL ELECTRONICS LTD
25 CARBINE RD, PANMURE.
P.O. BOX 14-348 PANMURE,
AUCKLAND, NEW ZEALAND.
PH (649) 570-5655 FAX (649) 574-0155 TELEX NZ2995

DRAWING NUMBER 347 040 374

SHEET 6 OF 6

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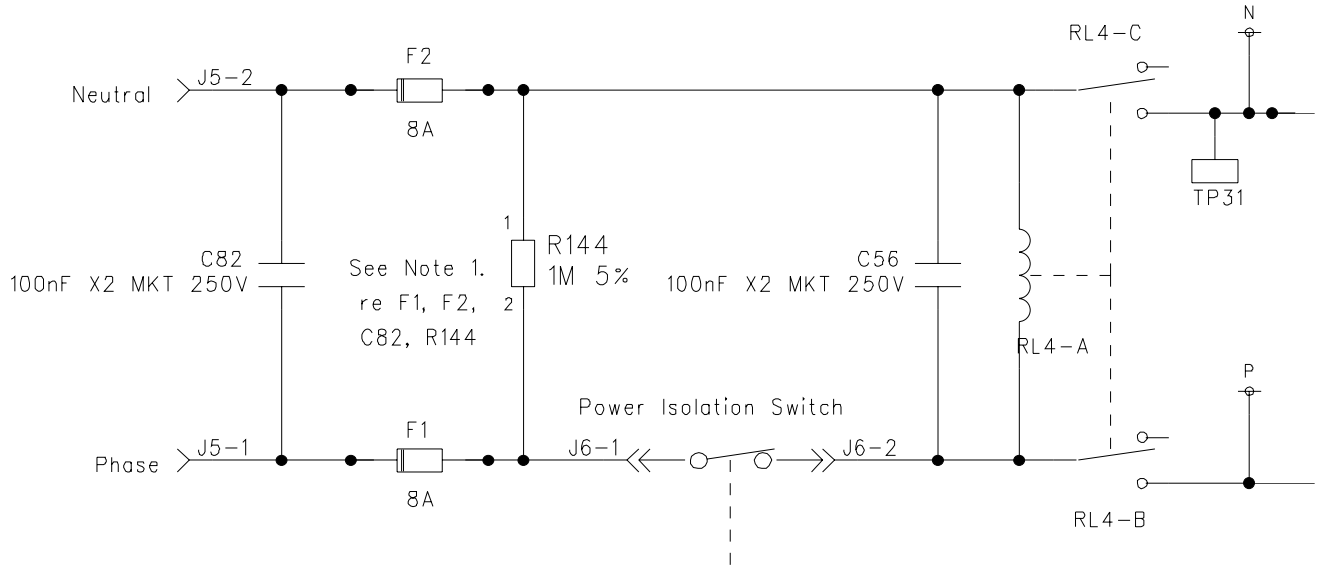
5.5 Circuit Schematics, continued.

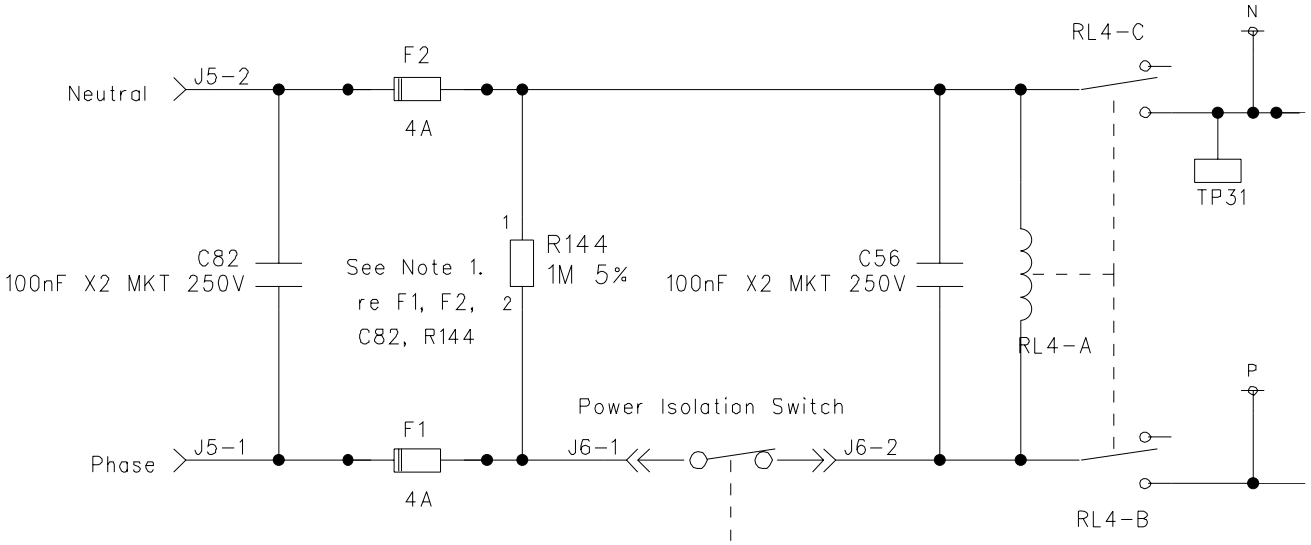
The following diagrams are an enlargement of the top left section of the Circuit Diagram on page 41 and show the fuse ratings for the different models.

The 100nF X2 Capacitor change was effective from early 1997

The 1M resistor change was effective from Serial Number 9892AEA00199. See PART 13: for warmer serial number identification.



120V Model



230V Model

PART 6: Head and Column

6.1 Head Assembly

6.1.1 Head Assembly Change History

Version 2

From August 2002 changes were made to the upper and lower cases of the head assembly to facilitate an additional bracket at the rear of the head. This version of head is most easily recognisable by the extra screw on the bottom face of the head in-between the former hinge.

NOTE: The lower case no longer swings down on a hinge.

A new spares kit was created to allow the replacement of old style upper and lower cases (043042359 – Kit Head Case Replacement) which includes both the upper and lower cases, labels, diffuser glass, new bracket and Nomex insulation.

Version 1

The original head assembly manufactured from January 1997.

Light Box

The original aluminium light box (648040141) was replaced with a black injection molded part (693041858) from October 1998. The two M3 x 16 Taptite screws (614040818) previously used for retaining the lamp receptacle are not required with the molded part which has snap fits for holding the receptacle.

In May 2001 the snap fits were altered to fit a new receptacle style. If a replacement light box (693041858) is required for a warmer prior to this date then a new lamp receptacle (342042009) will also need to be ordered.

Lamp Receptacle

A new lamp receptacle (342042009) was used from May 2001. This receptacle can not be retrofitted to earlier warmers. The original square receptacle (341040500) will not fit into light boxes in warmers manufactured after May 2001.

Head Manufacture Date

The date of manufacture of the head can be found underneath the head label (3) on the very top of the head. This manufacture date applies to the head only and should not be used when referring to the warmer as a whole unit.

Head Nut Removal Spanner

As of June 2003 a bent wire tool (171042012) is available for the removal of the head nut (648040142) and replaces the plastic tool (171040032) previously included in each warmer.

Swivel Head

From January 2003 the IW910AFS is available. This contains a swivel head for the French Market.

6.1.2 Head Assembly Parts List

Item	*Part Number*	*Description*
1	616050011	Screw #8 x 1” csk Phillip’s S/S (Recommended torque 1.2Nm)
2	693040689	Cap support arm
3	183041826	Label head
4	693040666*	Case upper head molded
5	183041827	Label warning case internal
6	614040153	Screw #8 x 1" panpozi
7	331040167	Baffle insulation upper case
8	095428265	Harness upper head
9	693041424	Support arm
10	334060011	Sleeving heat shrink 1/4" Viton
11	342042009	Receptacle lamp halogen
12	614040818	Screw M3x16 Taptite (pre September 1998)
13	648040135	Reflector
14	349040128	Thermostat
15	622040508	Washer M5 5.3x12.5 O/D
16	614040153	Screw #8 x 1" panpozi
17	331040164	Insulator element reflector
18	693041858	Light box
19	648040145	Element 100V 450W
	648040144	Element 120V 450W
	648040134	Element 230V 450W
20	424040069	Halogen lamp 20W
21	195900044	Silicon tape 363 single sided 1"
22	693040665*	Case lower head molded
23	433040012	Diffuser glass light
24	614042011	Screw M4 x 10 SS CSK Philips
25	648040140	Grille
26	642042045**	Clip Wire Warmer Head
27	642042046**	Clip Retainer Warmer Head
28	614042010**	Screw M4 x 8 Pan Philips S/S
29	642042050	Bracket Head Rear IW2G
30	614040132	Screw 3x8plas W/Hd Plps2yelchr
31	697042005	Lock Nut Swivel Head Patient Warmer
32	622040150	Washer Arm
33	697042006	Swivel Head Stationary Patient Warmer
34	622040151	Washer Pivot
35	697042007	Swivel Head Rotate Patient Warmer
36	614040864	Screw M5x30 Allen Cap SS

NOTE: Complete heater assembly available as Part No. 043041129 - 230V
043041130 - 120V
043041131 - 100V

* These parts available as a kit of plastic moldings – 043042359 Kit Head Replacement

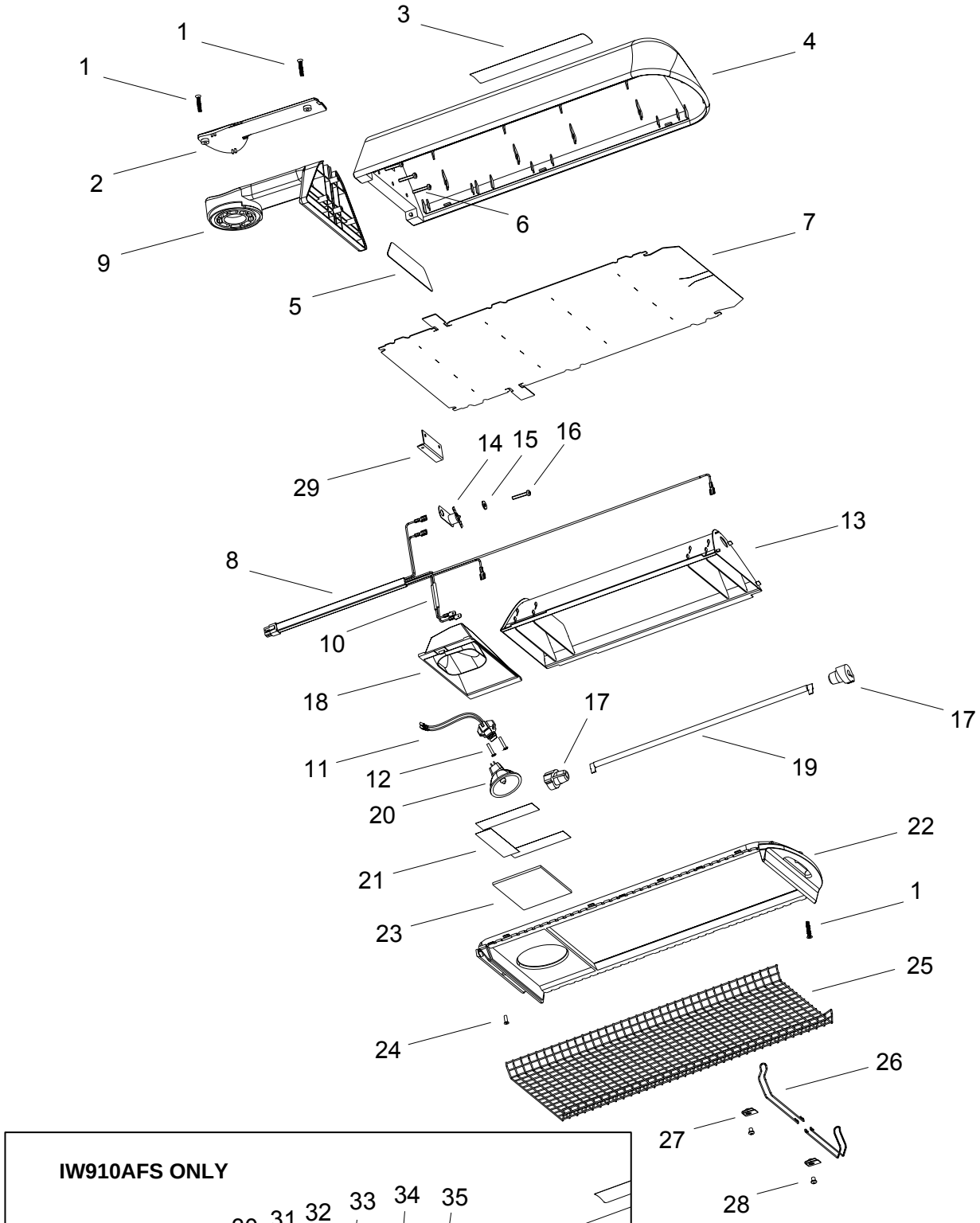
** These parts only available as a complete kit – 043042239 Kit Warmer Head Clip

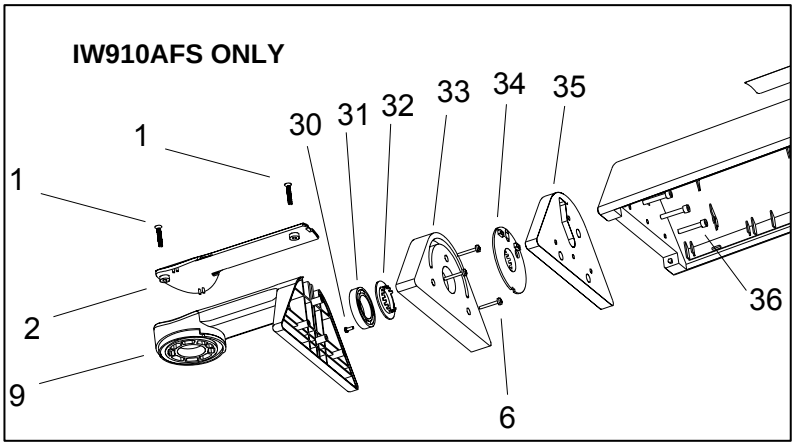
NOTE: If the reflector (13) is replaced it is important to ensure that it is correctly aligned inside the upper case (4). The flats along each side of the reflector have steps cut out from either end to assist assembly. The reflector is placed in the plastic head molding such that aluminium flat is positioned under each of the four (two per side) plastic tabs in the upper case. The reflector should sit evenly in the head under the four front plastic tabs and Nomex.

NOTE: Reflectors manufactured prior to June 2003 were not symmetrical, In this case the end with the two step cut out goes to the back of the head.

NOTE: The IW910AFS contains extra parts shown inside the box on the next page & that part #16 is replaced by #36 for this model.

6.1.3 Head Assembly Diagram





6.2 IW900 Controller Assembly

6.2.1 IW900 Controller Assembly Parts List

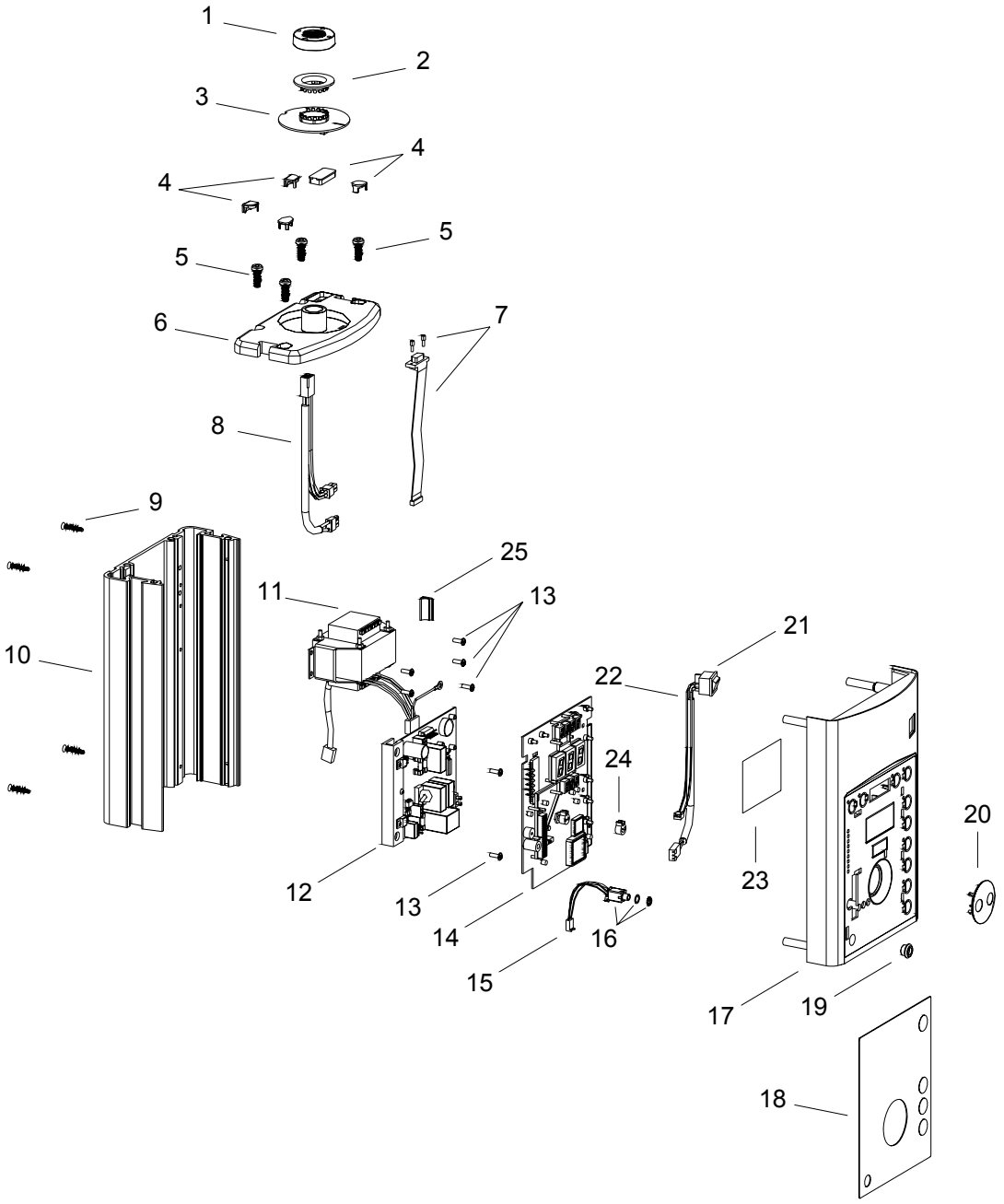
Item	*Part Number*	*Description*
1	648040142	Pivot securing nut
2	622040150	Washer arm
3	622040151	Washer pivot
4	693040706	Plug set (5 pieces)
5	614040309	Screw M8 x 20 cap low profile
6	693041423	Column cap top
7	095428283	Harness RS232
8	095428266	Harness lower head
9	616050011	Screw #8 x 1" csk Phillip's S/S (Recommended torque 1.2Nm)
10	641040815	Extrusion column short
11	043040953	Transformer for 100V models
	043040925	Transformer for 120V models
	043040902	Transformer for 230V models
12	043041005	PCB Power for 100V models
	043041004	PCB Power for 120V models
	043041003	PCB Power for 230V models
13	614040117	Screw M4 x 8 Taptite
14	043041145	PCB Control for PW810
	043041041	PCB Control for IW910, IW93x, IW960, IW980 (Servo Control models)
	043041002	PCB Control for IW920, IW95x, IW970 & IW990 (Manual Control models)
15	095428269	Harness probe
16	341040369	Probe socket, nut and washer
17	043042035	Control panel for IW910, IW93x, IW960, IW980 (Servo Control models)
	043042036	Control panel for IW920, IW95x, IW970 & IW990 (Manual Control models)
18	233201602	Fascia Panel - Servo Control
	233201603	Fascia Panel - Manual Control
	NOTE: Fascia Panels listed below have been superseded from July 2004	
	233201438	Fascia Panel for Servo Control models - English
	233201455	Fascia Panel for Manual Control models - English
	233201519	Fascia Panel for Servo Control models - Symbols
	233201520	Fascia Panel for Manual Control models - Symbols
19	693040736	Cap probe socket
20	693040677	Control knob plastic
21	349040134	Rocker switch DPDT 10A
22	095428270	Harness mains switch
23	……	Label fuse for 100V/120V models (specify model number)
	……	Label fuse for 230V models (specify model number)
24	693040271	Knob spacer
25	341040543	Clip adhesive ribbon cable

Replacement Fuses for Power PCB

999830009	Fuse 2A 250V fast blow 20x5mm (F3 and F4 for all models)
348060023	Fuse 8A 250V fast blow 20x5mm (F5 for all models, F1 and F2 for 100V/120V models)
348060022	Fuse 4A 250V fast blow 20x5mm (F1 and F2 for 230V models)

NOTE: 20x5mm fast blow fuses are available from standard electrical suppliers. The correct replacement fuses are listed on the label inside the front panel (see part 23).

6.2.2 IW900 Controller Assembly Diagram



6.2.3 Power Cords

All power cords have a female IEC plug and the appropriate connection for:

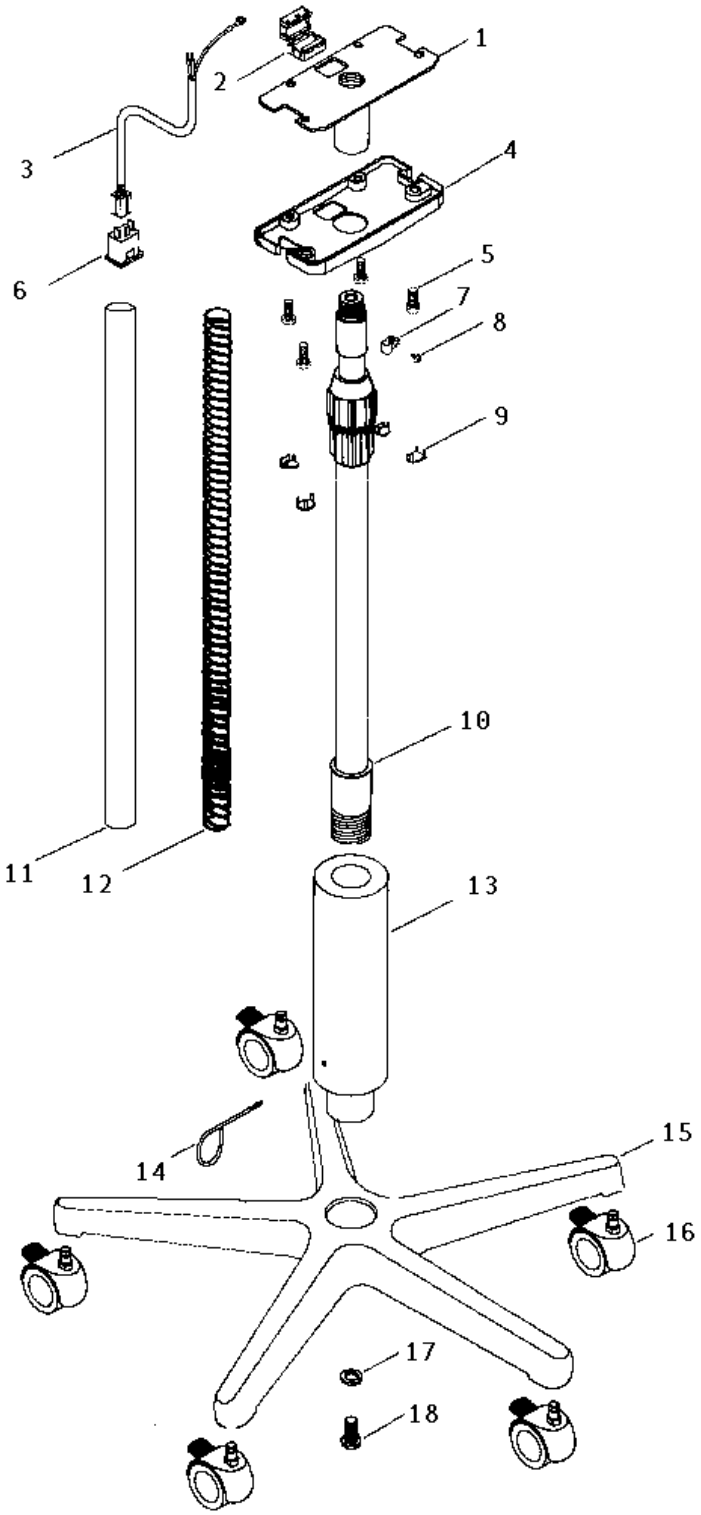
Part Number	*Country*	*Spare*
095428128	Asia Pacific Region and China	
095428217	Europe	043042029
095428214	United Kingdom	043042028
095428308	USA and Japan	043042023
095428248	No Plug Fitted	

6.3 IW910/920 Mobile Column Assembly

6.3.1 Mobile Column Assembly Parts List

Item	*Part Number*	*Description*
1	641040763	Bracket support
2	389045063	Ferrite core EMI clamp
3	095428299	Harness mains inlet
4	043042399	Cap plastic column lower - mobile
5	614040309	Screw M8 x 20 cap low profile
6	341050216	Socket power inlet snap mobile
7	647040117	Cable grip p-type
8	614040117	Screw M4x8 Taptite
9	693040706	Plug set (5 pieces)
10	043040978	Pole extendible assembly
11	187040191	Polysleeve 41 mm x 100 cm
12	662040056	Spring mobile warmer pole
13	655040082	Stabiliser weight base mobile
14	651040172	Hook cable
15	693041480	Base mobile finished
16	665040014	Castor locking 50 mm
17	622040624	Washer M12 spring
18	614040614	Screw M12x25 Allen S/S button

6.3.2 Mobile Column Assembly Diagram



Intentionally Blank

6.4 IW93x/95x CosyCot™ Column Assembly

6.4.1 CosyCot™ Column Assembly Change History

Variations in the column assemblies are most easily discernible by the number of column extrusions used and are defined as such.

Version 3 – Two Part Column Assembly

From July 2001 the two upper columns were combined into a single column (642042024) and a foam gasket (331042014) replaced the upper Mylar gasket. The upper column harness (23) was also changed to remove the middle column earthing points.

Version 2 – Three Part Column Assembly

From July 1998 the single column was replaced with a three-piece construction consisting of a substantially thicker lower column (641040737) and two standard sections (641040740 and 641040815). Internal Mylar gaskets were added to create an oxygen compartment for the Neopuff™ and gas accessories and the dovetail sliders (641040738) increased to 200mm. The column harness was broken into two harnesses to ensure each section of column was earthed.

Version 1 – Single Column Assembly

The original column assembly manufactured from January 1997 and consisting of a single powder coated aluminium extrusion as the backbone of the assembly.

Column – Base Bolt Variations

The original M8 bolts used up until March 1998 were replaced with a separate stud (614040859) that is fixed into the lower column and a special M8 x 16 screw (614040858). This change is in conjunction with a change to the base assembly and the studs will only fit into these bases (with ∅12.8 mm mounting holes). For earlier bases a replacement bolt (614040346) is available.

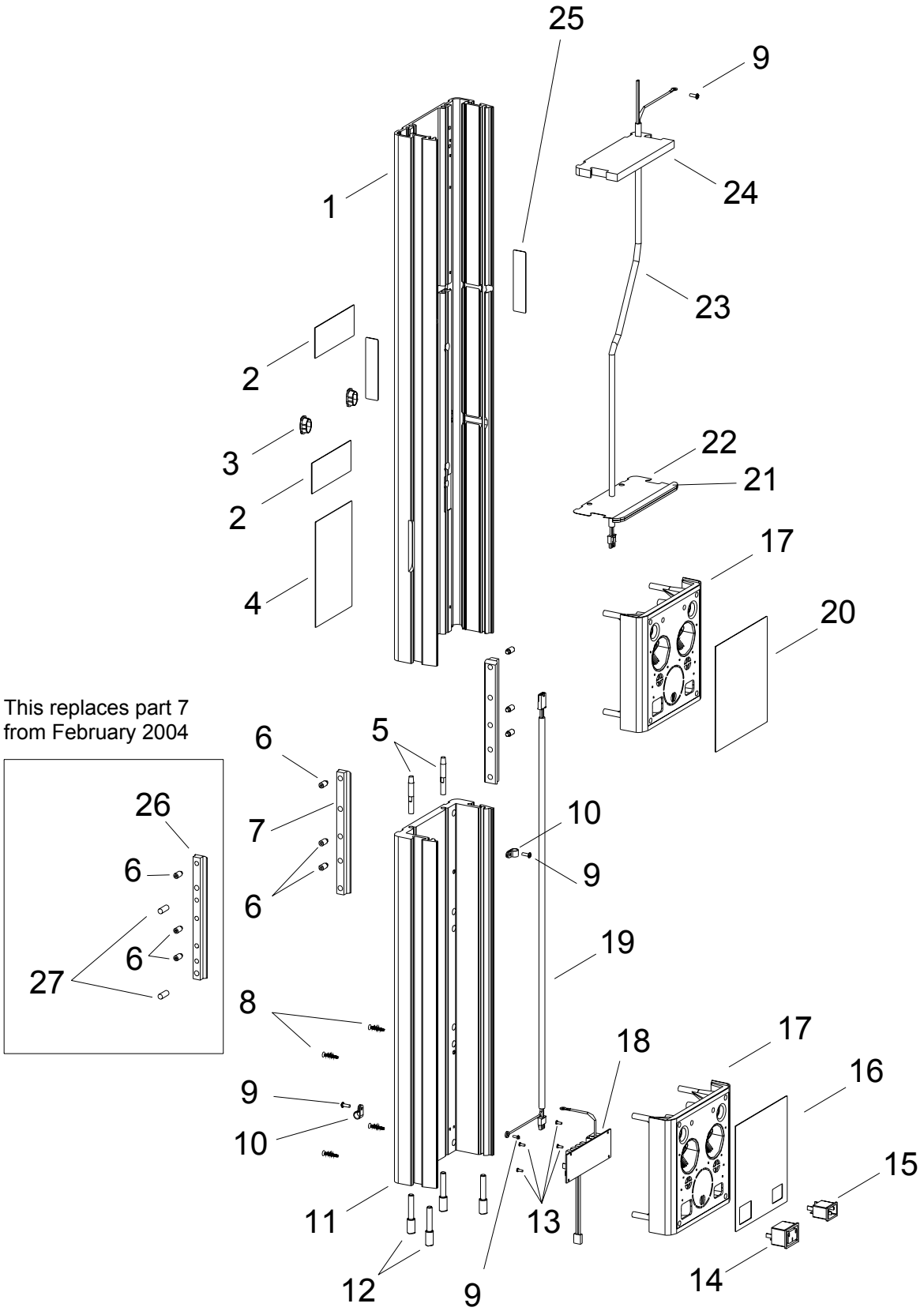
6.4.2 CosyCot™ Two Part Column Assembly Parts List (Manufactured from July 2001)

Item	*Part Number*	*Description*
1	642042097	Extrusion Column Upper Finished
2	183041960	Label Cover Gas Holes
3	693041492	Cap Column Oxygen II
4	693040746	Cover Label Panel Clear
5	628040048	Pin locator split column
6	614040326	Screw M8 x 16 grub
7	641040738	Extrusion slider dovetail 0.2 m
8	616050011	Screw 8 x 1” CSK Phil (Recommended torque 1.2Nm)
9	614040117	Screw M4 x 8 Pan Phillips
10	647040117	Cable grip - P type
11	641040737	Extrusion column lower
12	614040859	Stud M8 x 40
13	614040132	Screw 3 x 8 plas w/hd
14	341050215	Socket power outlet snap 3 pt
15	341050214	Socket power inlet snap 3 pt
16	233201450	Panel fascia power IW2G
17	693040709	Panels accessories
18	043041137	PCB power supply CosyCot™ spare
19	095428574	Harness column lower
20	233201451	Panel Fascia Blank IW2G
21	693040735	Gasket foam IW2G
22	336060118	Gasket Column Oxygen Lower
23	095542034	Harness Upper Joined Column
24	331042014	Gasket Column Oxygen Foam
25	183041953	Label Weight vs. Height Warning Symbol
26	642042083	Extrusion Dovetail Frame Mtg
27	661042048	Pin Dowell 20mm SS
28	095428295	Harness supply PCB IW2G

NOTE: For item 1 for Germany the column used is 642042024. Additional holes to accept DIN fittings.

Items 17 and 20 available assembled as Part No. 043041085

6.4.3 CosyCot™ Two Part Column Assembly Diagram (Manufactured from July 2001)

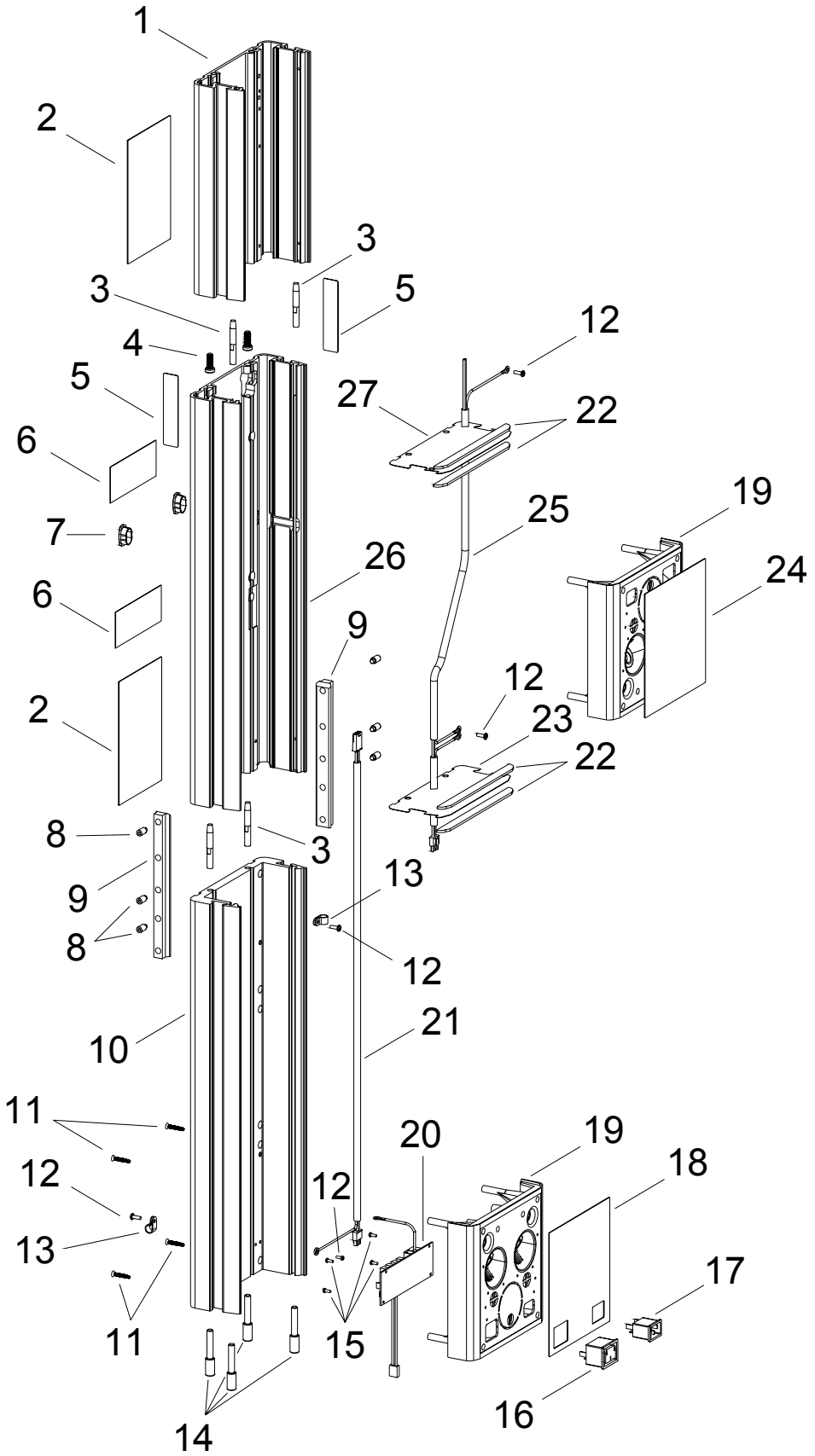


6.4.4 CosyCot™ Three Part Column Assembly Parts List (Manufactured from July 1998 until July 2001)

Item	*Part Number*	*Description*
1	641040815	Extrusion Column Short
2	693040746	Cover Label Panel Clear
3	628040048	Pin locator split column
4	614040309	Screw M8 x 20 cap low profile
5	183041953	Label Weight vs. Height Warning Symbol
6	183041960	Label Cover Gas Holes
7	693041492	Cap Column Oxygen II
8	614040326	Screw M8 x 16 grub
9	641040738	Extrusion slider dovetail 0.2 m
10	641040737	Extrusion column lower
11	616050011	Screw 8 x 1” CSK Phil (Recommended torque 1.2Nm)
12	614040117	Screw M4 x 8 Pan Phillips
13	647040117	Cable grip - P type
14	614040859	Stud M8 x 40
15	614040132	Screw 3 x 8 plas w/hd
16	341050215	Socket power outlet snap 3 pt
17	341050214	Socket power inlet snap 3 pt
18	233201450	Panel fascia power IW2G
19	693040709	Panels accessories
20	043041137	PCB power supply CosyCot™ spare
21	095428574	Harness column lower
22	693040735	Gasket foam IW2G
23	336060118	Gasket Column Oxygen Lower
24	233201451	Panel Fascia Blank IW2G
25	095428573	Harness Column Upper
26	641040740	Extrusion column middle
27	336060116	Gasket Column Oxygen Upper

NOTE: Items 19 and 24 available assembled as Part No. 043041085

6.4.5 CosyCot™ Three Part Column Assembly Diagram (Manufactured from July 1998 until July 2001)

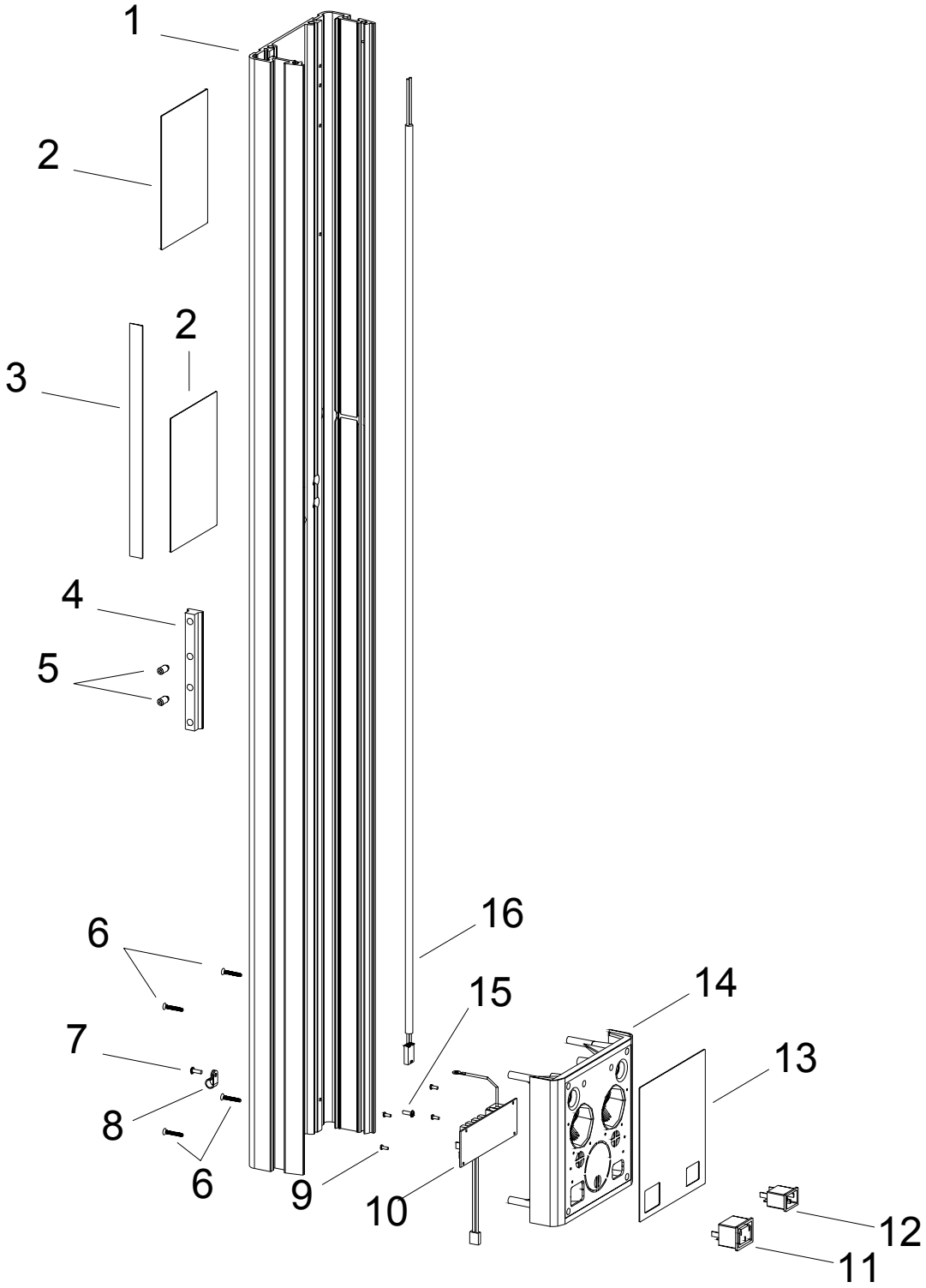


6.4.6 CosyCot™ Single Column Assembly Parts List (Manufactured from January 1997 until July 1998)

NOTE: For clarity some common components have been omitted. For additional parts information refer to sections 6.2.2 and 6.4.3.

Item	*Part Number*	*Description*
1	641040814	Extrusion Column 1430mm
2	693040746	Cover Label Panel Clear
3	183041953	Label Weight vs. Height Warning Symbol
4	641040796	Extrusion slider dovetail 150mm
5	614040326	Screw M8 x 16 grub
6	616050011	Screw 8 x 1" CSK Phil (Recommended torque 1.2Nm)
7	614040117	Screw M4 x 8 Pan Phillips
8	647040117	Cable grip - P type
9	614040132	Screw 3 x 8 plas w/hd
10	043041137	PCB power supply CosyCot™ spare
11	341050215	Socket power outlet snap 3 pt
12	341050214	Socket power inlet snap 3 pt
13	233201450	Panel fascia power IW2G
14	693040709	Panels accessories
15	614040117	Screw M4 x 8 Pan Phillips
16	095428296	Harness Supply to Power PCB

6.4.7 CosyCot™ Single Column Assembly Diagram (Manufactured from January 1997 until July 1998)



6.5 IW960/970 Wallmount CosyCot™ Column Assembly

(Discontinued from February 2004)

6.5.1 CosyCot™ Column Assembly Change History

The IW960/970 Wallmount CosyCot™'shave undergone the same change history in the column extrusions as for the IW93x/95x CosyCot™ columns (refer section 6.4.1)

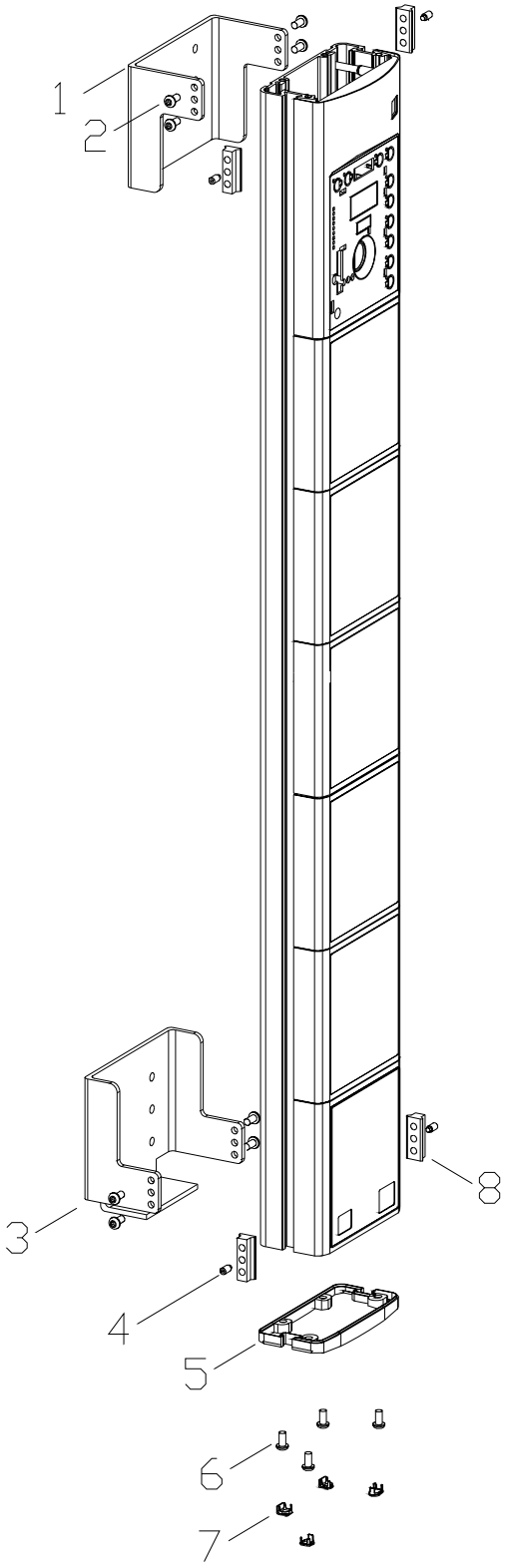
6.5.2 IW960/970 Wall Mount CosyCot™ Column Parts List

NOTE: The below parts list only specifies those components unique to the IW960/970 Wall Mount CosyCot™'s. For additional parts information refer to section 6.2.2and 5.4.3.

Item	*Part Number*	*Description*
1	641040827	Bracket wall mount top
2	614040325	Screw M8 x 16 Allen button head
3	641040824	Bracket wall mount bottom
4	614040326	Screw M8 x 16 grub
5	693040741	Cap end column
6	614040309	Screw M8 x 20 cap low profile
7	693040706	Plug set (contains complete set of five plugs)
8	655040088	Block support 50 mm

NOTE: Items 2, 4 & 8 available assembled as Part No. 043041084 – Mounting Block Kit 8mm

6.5.3 IW960/970 Wall Mount CosyCot™ Column Assembly Diagram (Discontinued from February 2004)



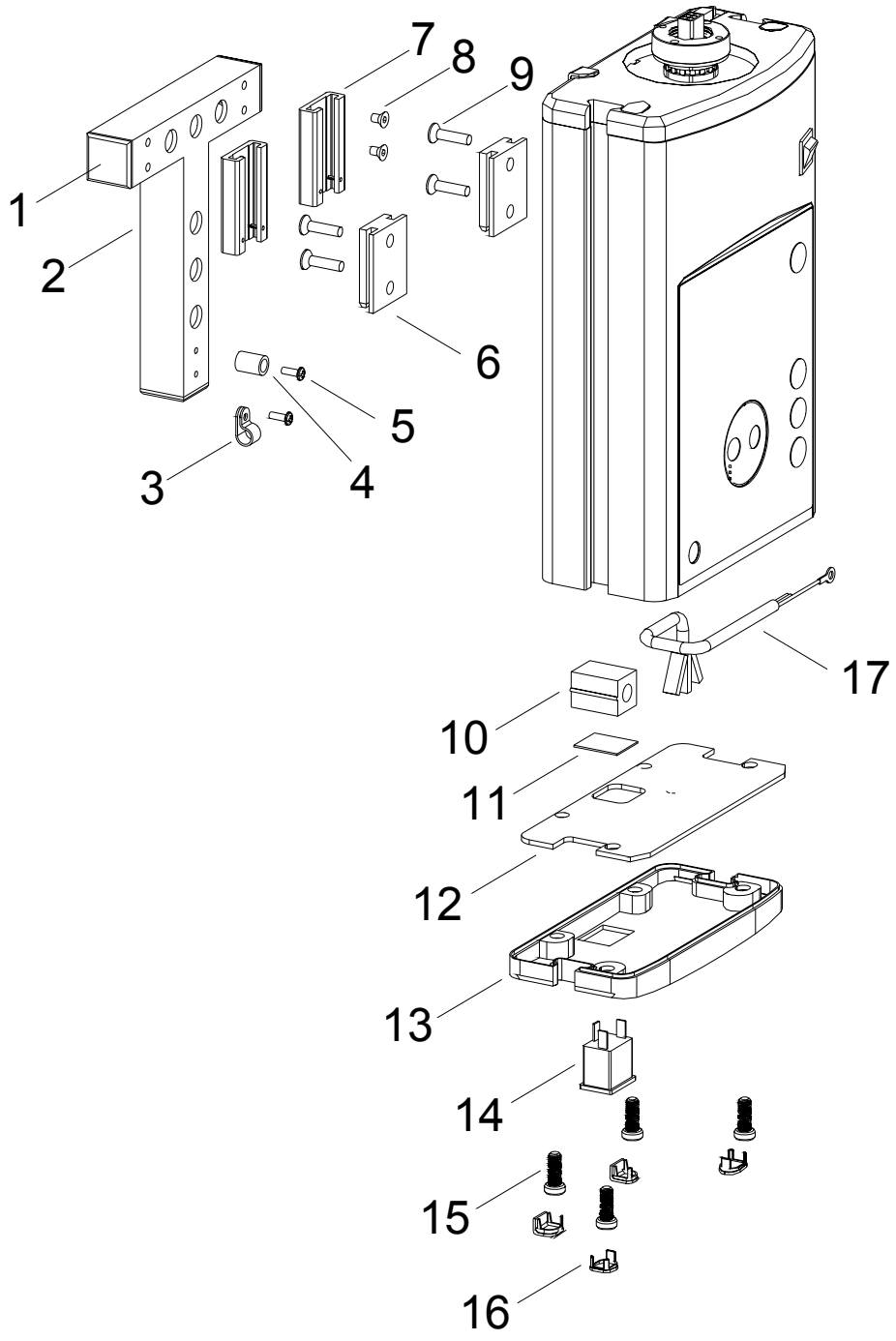
6.6 IW980/990 Wall Mount Column Assembly

6.6.1 IW980/990 Wallmount Column Assembly Parts List

NOTE: The below parts list only specifies those components unique to the IW980/990 Wall Mount CosyCot™'s. For additional parts information refer to section 6.2.2.

Item	*Part Number*	*Description*
1	693041448	Plug End Wallmount 30mm Square
2	641040821	Bracket Wallmount Aluminium
3	647040117	Cable Grip – P Type
4	693041443	Spacer Bracket to Column IW980/990
5	614040117	Screw M4 x 8 Pan Phillips
6	693040491	Bracket Mounting 30mm x 5mm Tongue
7	641040717	Bracket 30mm C-Slot
8	614040092	Screw M5 x 8 CSK Black Allen
9	614040208	Screw M6 x 25 CSK Allen
10	389045063	Ferrite Core EMI Clamp
11	195680013	Tape Foam Double Sided
12	641040822	Bracket Support Wallmount Steel
13	043042398	Cap Plastic Column Lower - Wall
14	341050216	Socket Power Inlet
15	614040309	Screw M8 x 20 cap low profile
16	693040706	Plug set (contains complete set of five plugs)
17	095428299	Harness Mains Inlet Mobile IW2G

6.6.2 IW980/990 Wall Mount Column Assembly Diagram



PART 7: CosyCot™ Bassinet

7.1 Bassinet Change History

Version 3.1

This bassinet is centrally mounted off shoulder bolts rather than brackets off the rear. As a result the extrusion has extra holes and the brake system has been upgraded.

Version 3

This bassinet has lift and fold side panels and an adjustable transport handle. Also included are silicon tube tidies in the corner caps and on each of the front and rear panels. A modified bassinet extrusion removes many of the aluminium dovetail blocks for fixing the rear handle, brake cable and x-ray tray.

Version 2.5

This bassinet has lift and fold side panels and an adjustable transport handle. Also included are silicon tube tidies in the corner caps and on each of the front and rear panels.

Version 2.1

Version 2.1 varies from its predecessor by the inclusion of high profile corner caps and silicon corner tube tidies. This change necessitated a new set of side panels (043042201/202).

Version 2.0

In version 2.0 the fabric underlay was replaced by an ABS plastic sheet (255040074) and the corner block caps replaced with an injection molded part. This model also allowed the use of side panels with sealing strips to ease cleaning and coincided with the introduction of the long bassinet (900IW212).

Version 1

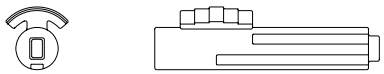
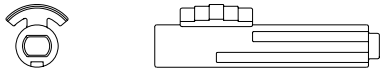
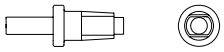
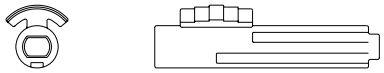
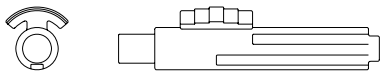
The original standard bassinet is most easily distinguished by the blue fabric underlay (254040068) on which the mattress was supported.

7.2 Side Panel Change History

The full range of side panels are shown in section 7.9. Included in this section is an identification chart which can be faxed out to customers to ensure accurate identification of the spare side panels when they are requested. In all instances the second number in each heading refers to a long side panel.

7.2.1 Side Panel Axle Changes

Bassinets prior to version 2.5 contained two dummy axles (693041414) in each corner cap that interlocked with two sliding axles (693041415) in each side panel.

	DUMMY AXLE - 693041414	SLIDING AXLE - 693041415
A		
B		
C		
D		 694042168/9

Type A and Type B

The interlocking rectangular section used on dummy axle (Type A above) was thickened and rounded on two sides in June 1997 (Type 2). At the same time the corresponding hole in the sliding axle was enlarged to accommodate the increased axle section.

Type C

In February 2001 an additional circular spigot was added (Type C) to aid in the alignment of the two axles when installing a side panel. Again the corresponding hole in the sliding axle was lengthened to accommodate the increased axle length.

Type D

The move to Lift and Fold Side panels in May 2002 resulted in two new sliding axles with a large protrusion from each (instead of the holes in Types A - C), and the omission of dummy axles all together.

Upgrading Side Panel Axles

Either Type A or Type B axles can be upgraded to Type C by simply removing the corner cap from the bassinet, pulling out each axle and inserting new 693041414 axles.

NOTE: The sliding axles in each side panel will also need to be changed.

All hands free side panels from February 2001 onwards used Type C sliding axles and will fit onto both Type B and Type C dummy axles. Manufacture of the hands free side panels ceased in November 2002 after which dummy axles were no longer required in the assembly.

Side panels manufactured previous to February 2001 will have Type B sliding axles that will NOT fit on Type C dummy axles. Follow the steps in section 3.5.11 to replace sliding axles if required

7.3 Bassinet (3.1) Assembly (IW93x, IW95x, IW960 & IW970)

These bassinets have lift and fold side panels and an adjustable transport handle.

Version 3.1 was manufactured from February 2004.

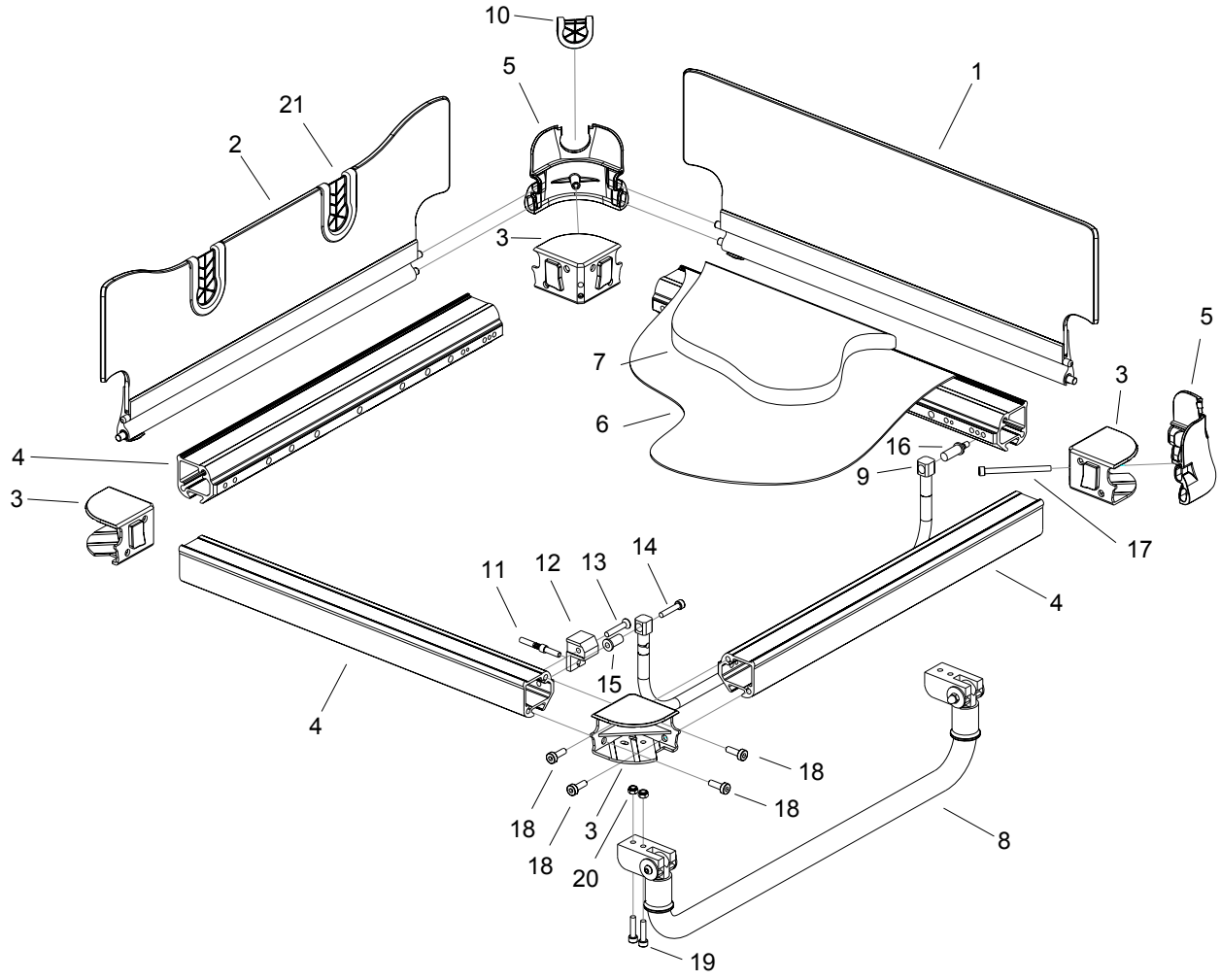
Spare Part Numbers:
043042629 BASSINET V3.1 STD SPARE
043042630 BASSINET V3.1 LONG SPARE

7.3.1 Bassinet (3.1) Assembly Parts List (Manufactured from February 2004)

Item	*Part Number*	*Description*
1	043042191	Bassinet (3) Side Blank Spare – refer section 7.9.3
	*(043042192**	*Bassinet (3) Side Long Spare – refer section 7.9.3)**
	*(043042388**	*Bassinet (3) Side Panel Spare Long with inserts – refer section 7.9.4)**
2	043042193	Bassinet (3) Side w/ Inserts Spare – refer section 7.9.2
3	642042043	Block Corner Bassinet
4	642042084	Extrusion Bassinet (3) Painted
	*(642042023**	*Extrusion Bassinet (3) Long Painted)**
5	694042167	Cap Corner Keyhole Plastic
6	254040071	Underlay mattress bassinet
	*(254040073**	*Underlay Mattress Bassinet Long)**
7	900IW201	Mattress Bassinet IW2G
	*(900IW213**	*Mattress Long)**
8	043042190	Handle Bassinet Transport Assembly – refer section 7.10
9	641040811	Handle Rear IW2G
10	694042133	Insert Tube Holder Corner Cap
11	661042045	Cable Brake – Std Bassinet
	661042046	Cable Brake – Long Bassinet
12	642042077	Block Handle Stop/Brake Tensioner
13	614042333	Screw M6x35 CSK
14	614040258	Screw M6 x 30 SS Cap
15	693041440	Bush Handle Pivot IW2G
16	694042392	Handle Pivot Pin
17	614040334	Bolt M6 x 75mm Allen Cap SS (Recommended torque 1.2Nm)
18	614040309	Screw M8 x 20 Cap Low Profile
19	614042006	Screw M6 x 25 Cap SS
20	621040524	Nut M6 Nyloc ZPS
21	642042032	Insert Tube Holder Bassinet Side
22	193610025	Adhesive Tape 4950VHB 25m roll *(attaches underlay to extrusion bassinet)*

* Denotes substitute part number for 900IW212 Bassinet Long.

7.3.2 Bassinet (3.1) Assembly Diagram (Manufactured from February 2004)



7.4 Bassinet (3) Assembly (IW93x, IW95x, IW960 & IW970)

These bassinets have lift and fold side panels and an adjustable transport handle.

Version 3.0 was manufactured from November 2002 to February 2004.

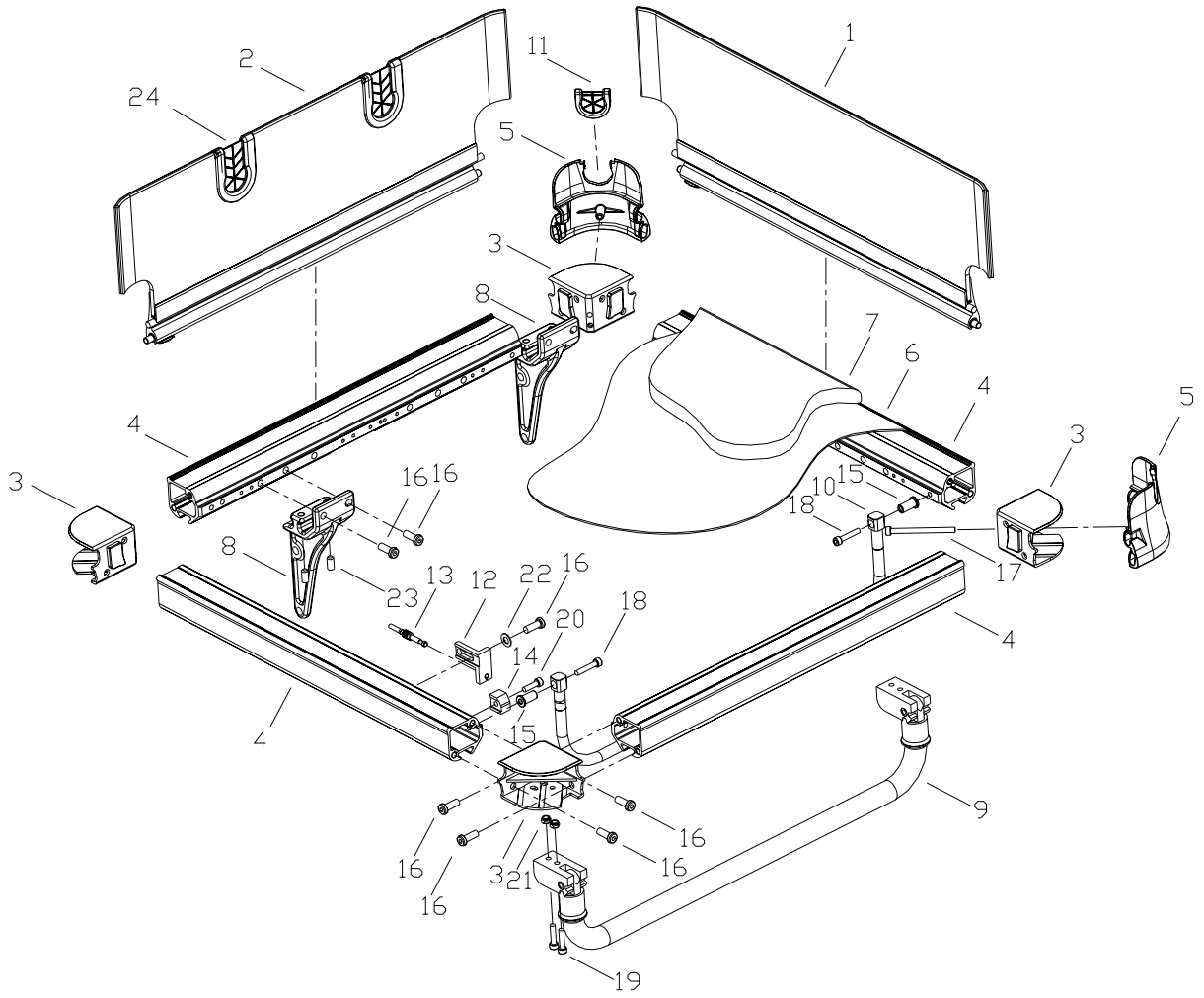
Spare Part Numbers:
043042627 BASSINET V3.0 STD SPARE
043042628 BASSINET V3.0 LONG SPARE

7.4.1 Bassinet (3) Assembly Parts List (Manufactured from November 2002 until February 2004)

Item	*Part Number*	*Description*
1	043042191	Bassinet (3) Side Blank Spare – refer section 7.9.3
	*(043042192**	*Bassinet (3) Side Long Spare – refer section 7.9.3)**
	*(043042388**	*Bassinet (3) Side Panel Spare Long with inserts – refer section 7.9.4)**
2	043042193	Bassinet (3) Side w/ Inserts Spare – refer section 7.9.2
3	642042043	Block Corner Bassinet
4	642042022	Extrusion Bassinet (3) Painted
	*(642042023**	*Extrusion Bassinet (3) Long Painted)**
5	694042167	Cap Corner Keyhole Plastic
6	254040071	Underlay mattress bassinet
	*(254040073**	*Underlay Mattress Bassinet Long)**
7	900IW201	Mattress Bassinet IW2G
	*(900IW213**	*Mattress Long)**
8	655040098	Attachment Bassinet Tilt
9	043042190	Handle Bassinet Transport Assembly – refer section 7.10
10	641040811	Handle Rear IW2G
11	694042133	Insert Tube Holder Corner Cap
12	642042019	Cable Tensioner
13	662050070	Cable Brake Bassinet
14	642042034	Block Tilt Limit Handle
15	693041440	Bush Handle Pivot IW2G
16	614040309	Screw M8 x 20 Cap Low Profile
17	614040334	Bolt M6 x 75mm Allen Cap SS (Recommended torque 1.2Nm)
18	614040258	Screw M6 x 30 SS Cap
19	614042006	Screw M6 x 25 Cap SS
20	614040168	Screw M6 x 20 Cap Stainless
21	621040524	Nut M6 Nyloc ZPS
22	100556	Washer M8 x 17 Flat
23	614040326	Screw M8 x 16 Grub Hex Dog Point
24	642042032	Insert Tube Holder Bassinet Side
25	193610025	Adhesive Tape 4950VHB 25m roll *(attaches underlay to extrusion bassinet)*

* Denotes substitute part number for 900IW212 Bassinet Long.

7.4.2 Bassinet (3) Assembly Diagram (Manufactured from August 2002 until February 2004)



7.5 Bassinet (2.5) Assembly (IW93x, IW95x, IW960 & IW970)

These bassinets have lift and fold side panels and an adjustable transport handle.

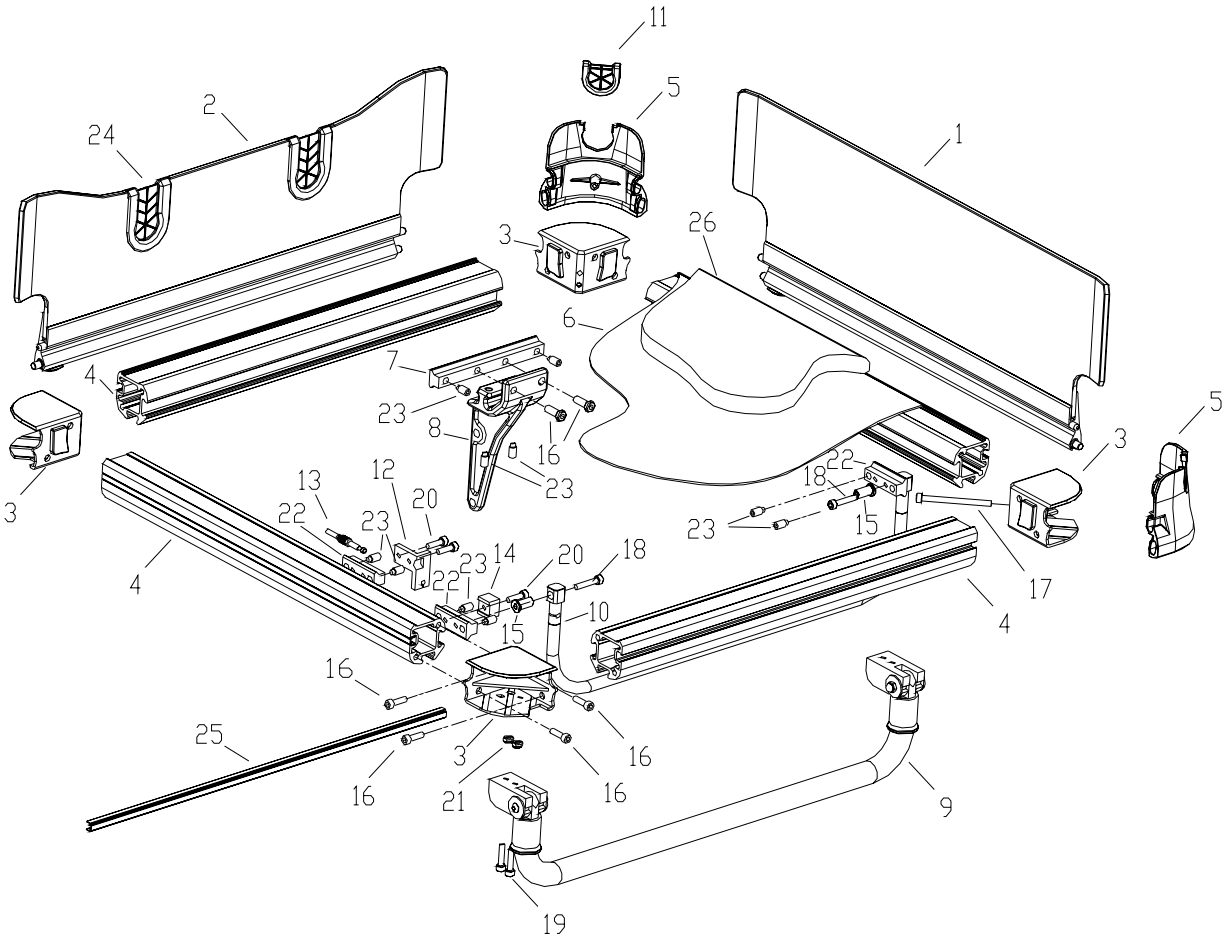
Version 2.5 was manufactured from April 2002 to November 2002.

7.5.1 Bassinet (2.5) Assembly Parts List (Manufactured from April 2002)

Item	*Part Number*	*Description*
1	043042191	Bassinet (3) Side Blank Spare – refer section 7.9.3
	*(043042192**	*Bassinet (3) Side Long Spare – refer section 7.9.3)**
	*(043042388**	*Bassinet (3) Side Panel Spare Long with inserts – refer section 7.9.4)**
2	043042193	Bassinet (3) Side w/ Inserts Spare – refer section 7.9.2
3	642042043	Block Corner Bassinet
4	641040756	Extrusion Bassinet (2) Painted
	*(641040834**	*Extrusion Bassinet (2) Long Painted)**
5	694042167	Cap Corner Keyhole Plastic
6	254040071	Underlay mattress bassinet
	*(254040073**	*Underlay Mattress Bassinet Long)**
7	641040796	Slider Dovetail 150mm
8	655040098	Attachment Bassinet Tilt
9	043042190	Handle Bassinet Transport Assembly – refer section 7.10
10	641040811	Handle Rear IW2G
11	694042133	Insert Tube Holder Corner Cap
12	655040096	Block Cable Tensioner IW2G
13	662050070	Cable Brake Bassinet
14	655040095	Block Tilt Limit IW2G
15	693041440	Bush Handle Pivot IW2G
16	614040309	Screw M8 x 20 Cap Low Profile
17	614040334	Bolt M6 x 75mm Allen Cap SS (Recommended torque 1.2Nm)
18	614040258	Screw M6 x 30 SS Cap
19	614042006	Screw M6 x 25 Cap SS
20	614040168	Screw M6 x 20 Cap Stainless
21	621040524	Nut M6 Nyloc ZPS
22	655040093	Block Support Rear Handle
23	614040326	Screw M8 x 16 Grub Hex Dog Point
24	642042032	Insert Tube Holder Bassinet Side
25	694042225	Extrusion Bassinet (2.5) Plastic Standard
	*(694042226**	*Extrusion Bassinet (2.5) Plastic Long)*
26	900IW201	Mattress Bassinet IW2G
	*(900IW213**	*Mattress Long)*
27	193610025	Adhesive Tape 4950VHB 25m roll
		(attaches underlay to extrusion bassinet)

* Denotes substitute part number for long bassinets.

7.5.2 Bassinet (2.5) Assembly Diagram (Manufactured from May 2002 to August 2002)



7.6 Bassinet (2.1) Assembly (IW93x, IW95x)

Version 2.1 has high profile corner caps with hands free sides. The addition of the corner tube tidies meant the side panel slots could be removed. Otherwise this model is identical to version 2.0.

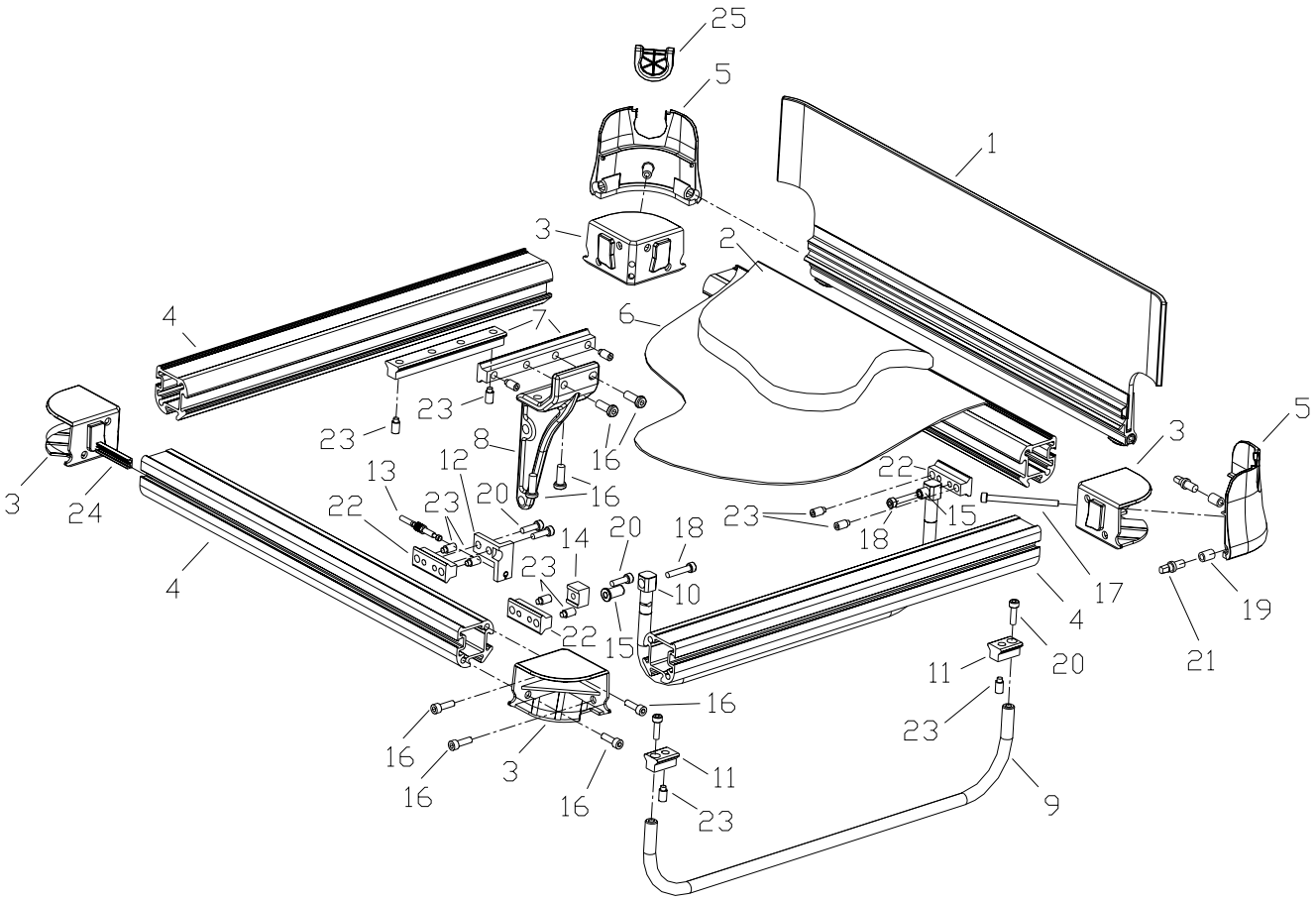
Version 2.1 was manufactured from Jan 2002 to April 2002.

7.6.1 Bassinet (2.1) Assembly Parts List

Item	*Part Number*	*Description*
1	043042201	Bassinet (2) Side with Seal – refer section 7.9.8
	*(043042202**	*Bassinet (2) Side Long with Seal – refer section 7.9.8)**
2	900IW201	Mattress Bassinet IW2G
	*(900IW213**	*Mattress Long)**
3	641040817	Block Corner Bassinet Painted
4	641040756	Extrusion Bassinet (2) Painted
	*(641040834**	*Extrusion Bassinet (2) Long Painted)**
5	694042134	Cap Corner Keyhole Plastic
6	254040071	Underlay mattress bassinet
	*(254040073**	*Underlay Mattress Bassinet Long)**
7	641040796	Slider Dovetail 150mm
8	655040098	Attachment Bassinet Tilt
9	641040810	Handle front
10	641040811	Handle Rear IW2G
11	655040092	Block Support Front Handle
12	655040096	Block Cable Tensioner IW2G
13	662050070	Cable Brake Bassinet
14	655040095	Block Tilt Limit IW2G
15	693041440	Bush Handle Pivot IW2G
16	614040309	Screw M8 x 20 Cap Low Profile
17	614040334	Bolt M6 x 75mm Allen Cap SS (Recommended torque 1.2Nm)
18	614040258	Screw M6 x 30 SS Cap
19	653040121	Bush Corner Cap
20	614040168	Screw M6 x 20 Cap Stainless
21	693041414	Axle Dummy
22	655040093	Block Support Rear Handle
23	614040326	Screw M8 x 16 Grub Hex Dog Point
24	693041413	Clip IW2G Plastic
25	694042133	Insert Tube Holder Corner Cap
26	193318825	Adhesive Tape 4950VHB 25m roll
		(attaches underlay to extrusion bassinet)

* Denotes substitute part number for long bassinets.

7.6.2 Bassinet (2.1) Assembly Diagram (Manufactured from Jan 2002 to April 2002)



7.7 Bassinet (2.0) Assembly (IW93x, IW95x, IW960 & IW970)

In version 2.0 the fabric underlay was replaced by an ABS plastic sheet (255040074) and the corner block caps replaced with an injection molded part (641040819). This model also allowed the use of side panels with sealing strips to ease cleaning. A long bassinet (900IW212) was also introduced with this version.

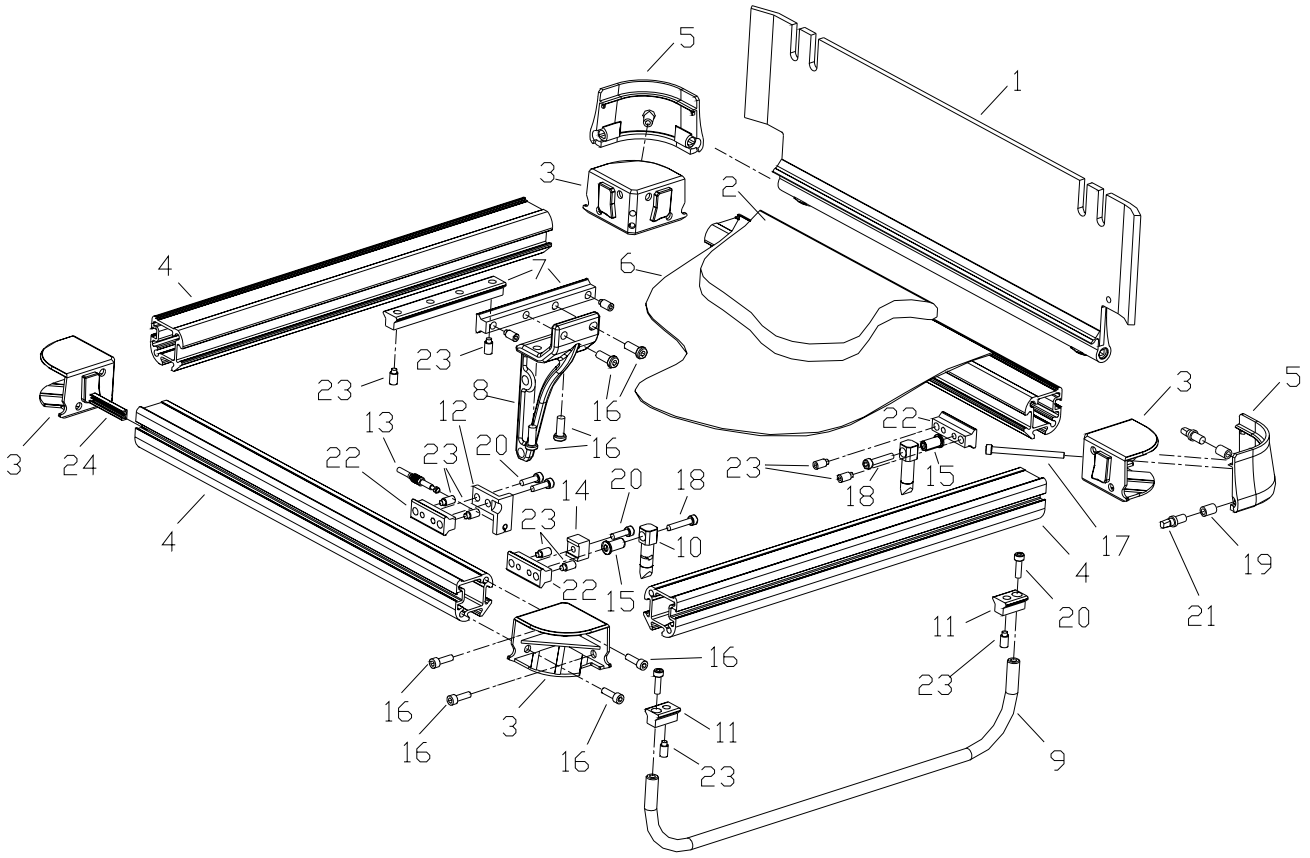
Version 2.0 was manufactured from April 1998 to Jan 2002.

7.7.1 Bassinet (2.0) Assembly Parts List

Item	*Part Number*	*Description*
1	043042096	Bassinet Side with Seal – refer section 7.9.9
	043041062	Bassinet Side No Seal – refer section 7.9.10
	*(043042095**	*Bassinet Side Long with Seal – refer section 7.9.9)**
	*(043041332**	*Bassinet Side Long No Seal – refer section 7.9.10)**
2	900IW201	Mattress Bassinet IW2G
	*(900IW213**	*Mattress Long)**
3	641040817	Block Corner Bassinet Painted
4	641040756	Extrusion Bassinet (2) Painted
	*(641040834**	*Extrusion Bassinet (2) Long Painted)**
5	641040819	Cap Corner Block Plastic
6	254040071	Underlay mattress bassinet
	*(254040073**	*Underlay Mattress Bassinet Long)**
7	641040796	Slider Dovetail 150mm
8	655040098	Attachment Bassinet Tilt
9	641040810	Handle front
10	641040811	Handle Rear IW2G
11	655040092	Block Support Front Handle
12	655040096	Block Cable Tensioner IW2G
13	662050070	Cable Brake Bassinet
14	655040095	Block Tilt Limit IW2G
15	693041440	Bush Handle Pivot IW2G
16	614040309	Screw M8 x 20 Cap Low Profile
17	614040334	Bolt M6 x 75mm Allen Cap SS (Recommended torque 1.2Nm)
18	614040258	Screw M6 x 30 SS Cap
19	653040121	Bush Corner Cap
20	614040168	Screw M6 x 20 Cap Stainless
21	693041414	Axle Dummy
22	655040093	Block Support Rear Handle
23	614040326	Screw M8 x 16 Grub Hex Dog Point
24	693041413	Clip IW2G Plastic
25	193610025	Adhesive Tape 4950VHB 33m roll
		(attaches underlay to extrusion bassinet – not shown)

* Denotes substitute part number for long bassinets.

7.7.2 Bassinet (2.0) Assembly Diagram (Manufactured from April 1998 to Jan 2002)



7.8 Bassinet (1.0) Assembly (IW93x, IW95x, IW960 & IW970)

The original standard bassinet had a fabric underlay (254040068) to support the mattress and stainless steel corner block caps (now replaced by part 641040819). No long bassinet was available in this version.

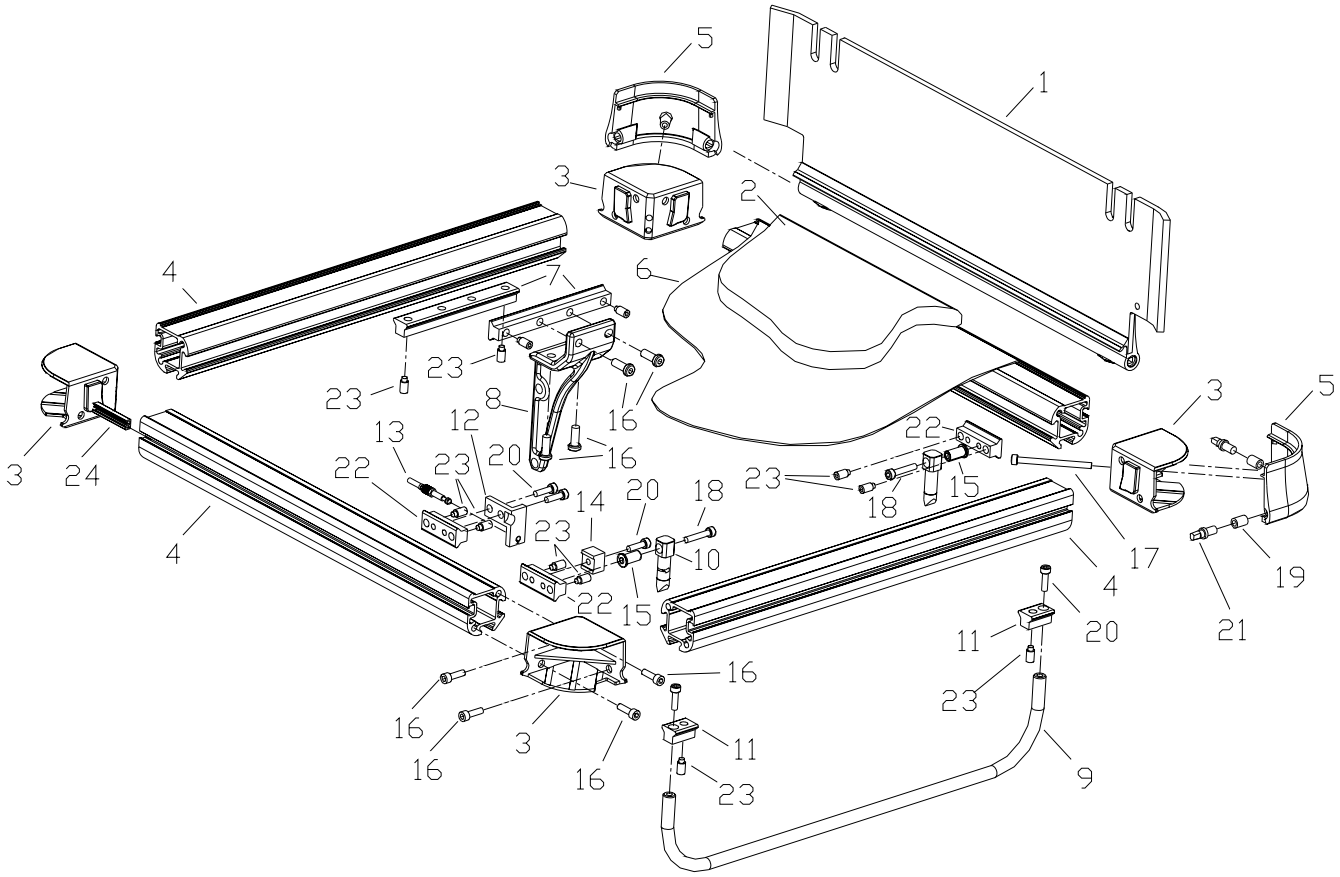
Version 1.0 was manufactured from January 1997 to April 1998.

7.8.1 Bassinet (1.0) Assembly Parts List

Item	*Part Number*	*Description*
1	043041062	Bassinet Side No Seal – refer section 7.9.10
2	900IW201	Mattress Bassinet IW2G
3	641040817	Block Corner Bassinet Painted
4	641040812	Extrusion Bassinet Finished
5	641040819	Cap Corner Block Plastic
6	254040068*	Mattress bottom bassinet IW2G*
7	641040796	Slider Dovetail 150mm
8	655040098	Attachment Bassinet Tilt
9	641040810	Handle front
10	641040811	Handle Rear IW2G
11	655040092	Block Support Front Handle
12	655040096	Block Cable Tensioner IW2G
13	662050070	Cable Brake Bassinet
14	655040095	Block Tilt Limit IW2G
15	693041440	Bush Handle Pivot IW2G
16	614040309	Screw M8 x 20 Cap Low Profile
17	614040334	Bolt M6 x 75mm Allen Cap SS (Recommended torque 1.2Nm)
18	614040258	Screw M6 x 30 SS Cap
19	653040121	Bush Corner Cap
20	614040168	Screw M6 x 20 Cap Stainless
21	693041414	Axle Dummy
22	655040093	Block Support Rear Handle
23	614040326	Screw M8 x 16 Grub Hex Dog Point
24	693041413	Clip IW2G Plastic

* The blue fabric underlay can be replaced with a white 2mm thick ABS plastic underlay by ordering kit 043042441 – Underlay Upgrade Kit Std bassinet.

7.8.2 Bassinet (1) Assembly Diagram (Manufactured from January 1997 to April 1998)



7.9 Bassinet Side Panel Assembly (IW93x, IW95x, IW960 & IW970)

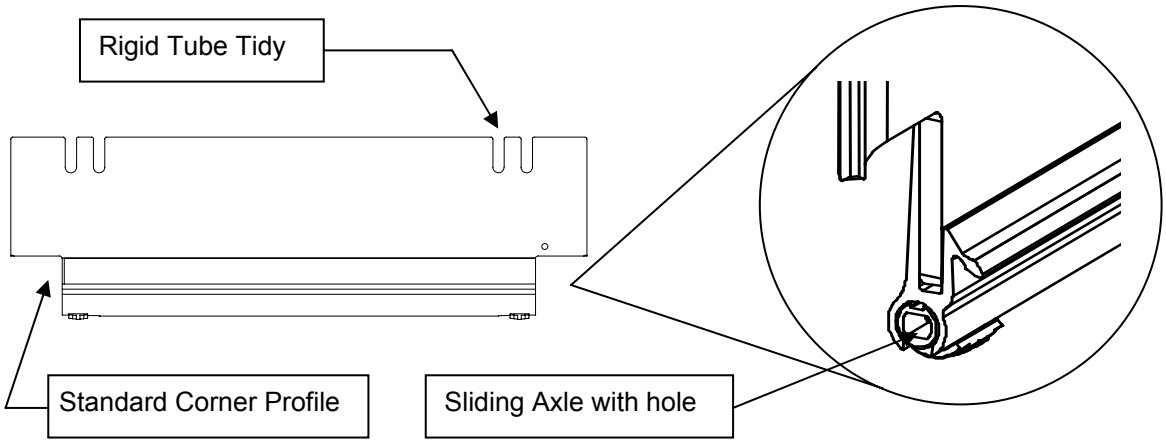
7.9.1 Bassinet Side Panel Identification

The improvements in bassinet design have resulted in a number of different bassinet side panels. The diagrams below will enable you to identify the correct side panel. The side panels vary depending on the following factors:

- Length of side panel
- Height of side panel
- Height of bassinet corner caps – standard or high profile
- Sliding Axle style – hole or stub
- Tube tidy style – rigid or inserts
- Santoprene sealing strip

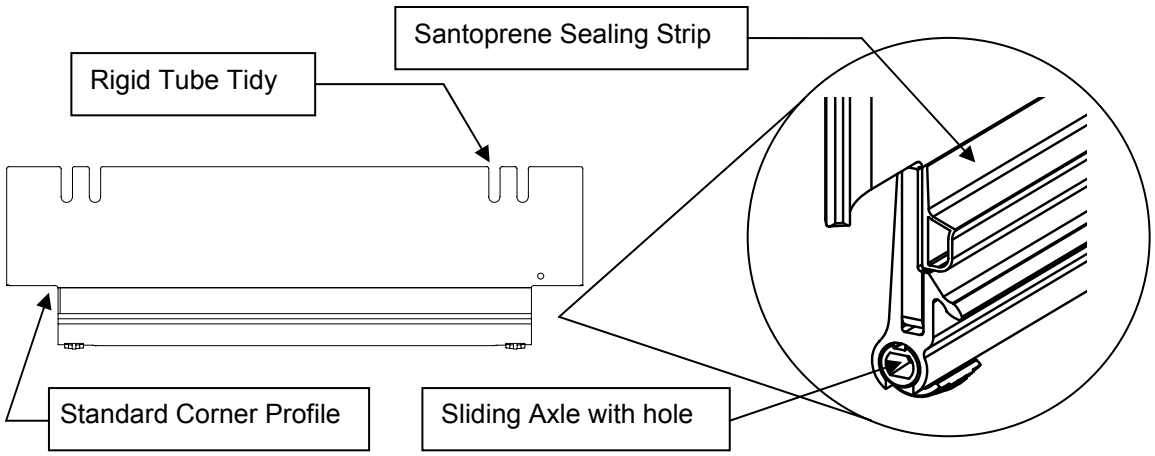
043041062/043041332* Bassinet Side No Seal (*Long)

These are hands free side panels designed for version 1.0 bassinets which have standard corner caps (641040819) and a fabric underlay (254040068).



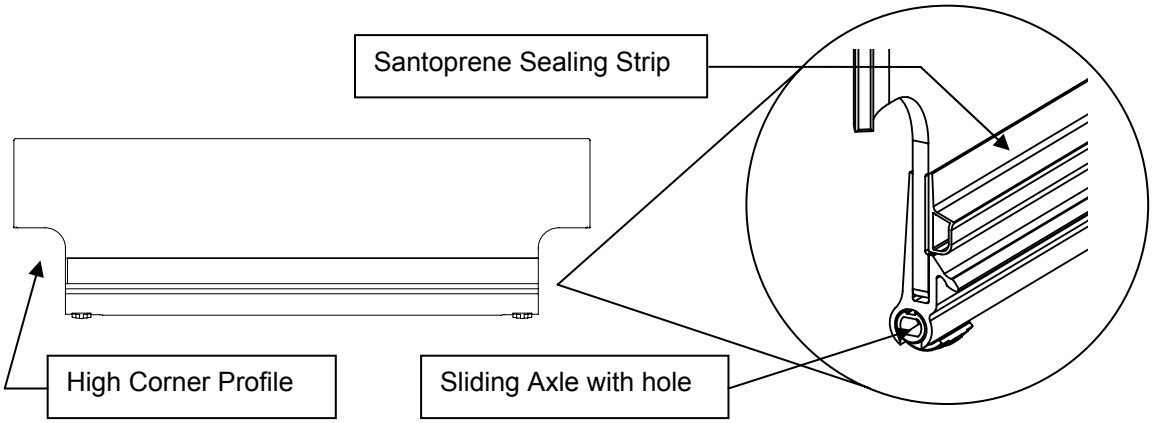
043042096/043042095* Bassinet Side with Seal (*Long)

These are hands free side panels designed for version 2.0 bassinets with standard corner caps (641040819) and a plastic mattress underlay (254040071).



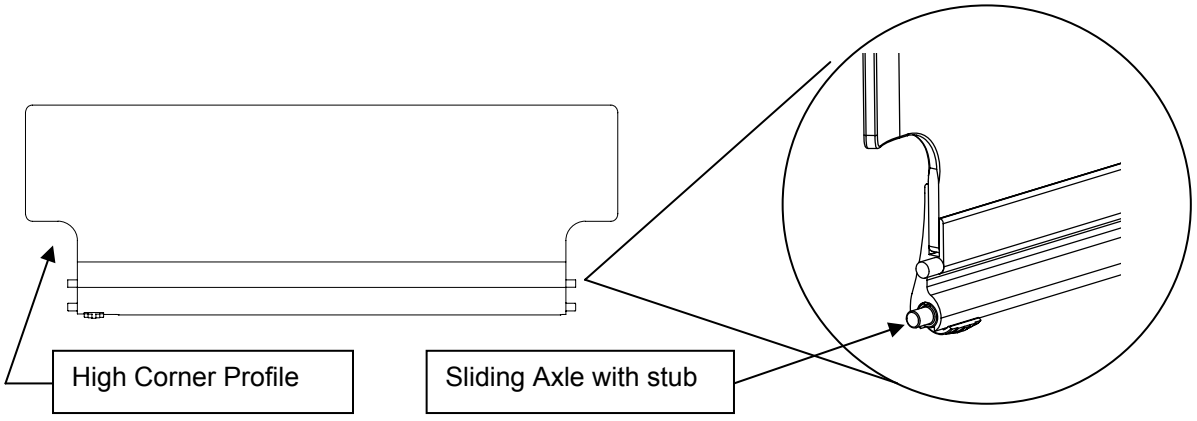
043042201/043042202* Bassinet (2) Side with Seal (*Long)

These are hands free side panels designed for version 2.1 bassinets with high profile corner caps (694042167) containing CornerGrip Tube holders (694042133) and a plastic underlay (254040071).



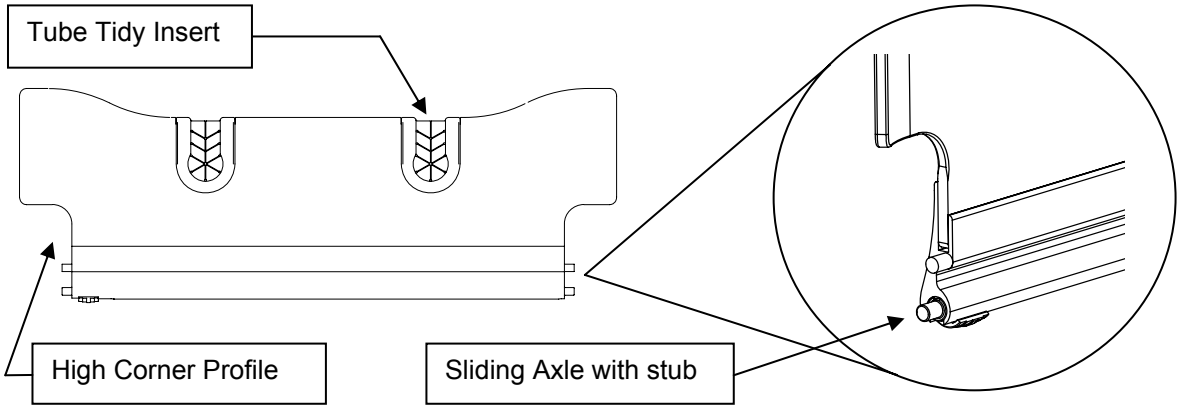
043042191/043042192* Bassinet (3) Blank Side Panels (*Long)

These are lift and fold side panels that will only fit on version 2.5 and 3.0 bassinets.



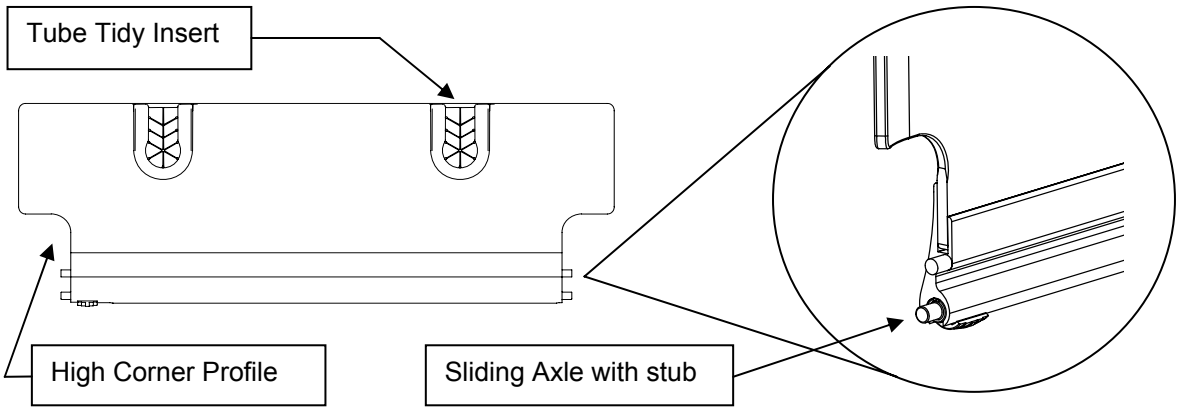
043042193 Bassinet (3) Side Panel with Inserts

This is a lift and fold side panel that will only fit on version 2.5 and 3.0 bassinets.



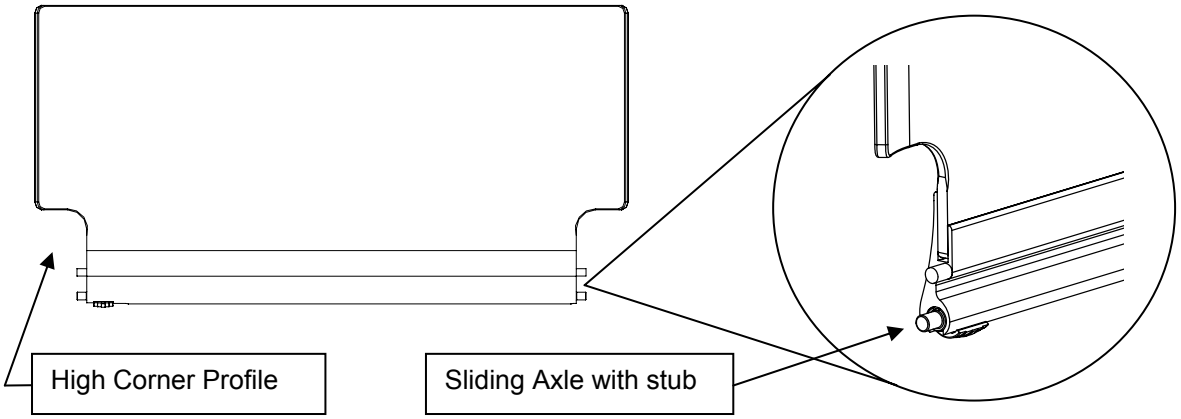
043042388 Bassinet (3) Side Panel Long with Inserts

This is a lift and fold side panel that will only fit on version 2.5 and 3.0 bassinets.



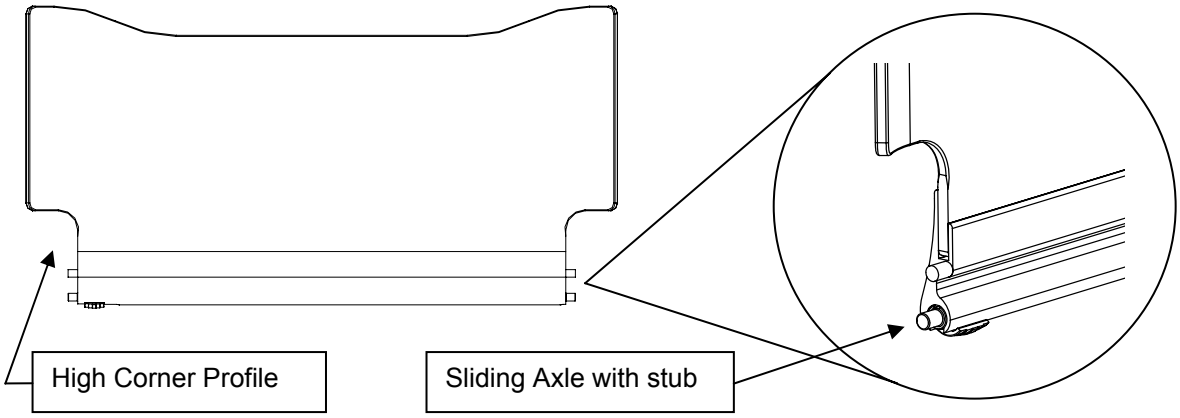
043042509/043042561* Bassinet (3) Side Panel High Blank (*Long)

This is a lift and fold side panel that will only fit on version 2.5 and 3.0 bassinets.



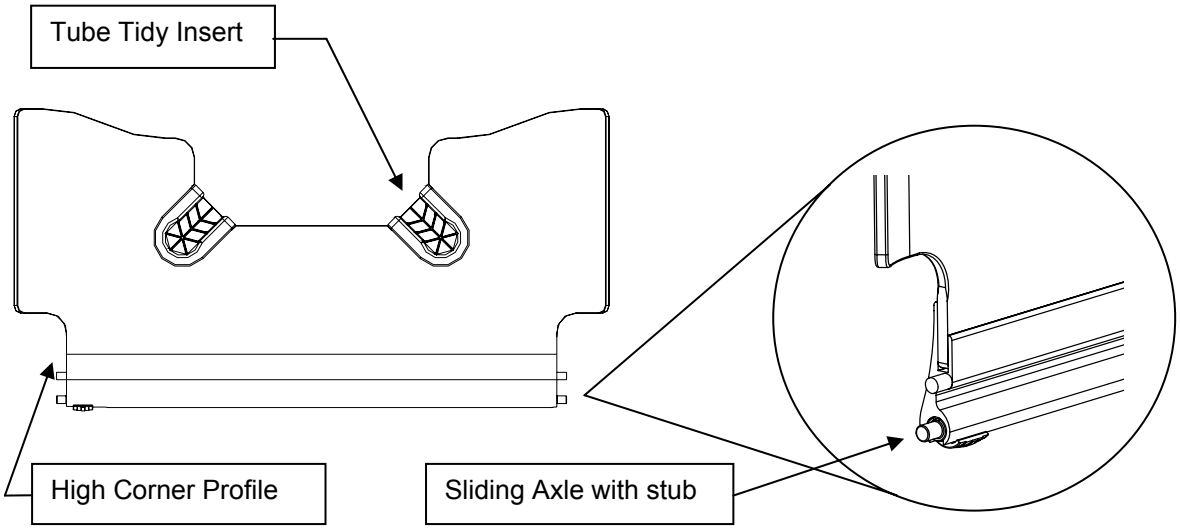
043042510 Bassinet (3) Side Panel High Front

This is a lift and fold side panel that will only fit on version 2.5 and 3.0 bassinets.



043042511 Bassinet (3) Side Panel High Back with Inserts

This is a lift and fold side panel that will only fit on version 2.5 and 3.0 bassinets.



7.9.2 043042193 Bassinet (3) Side Panel with Inserts

Order Number and Description:

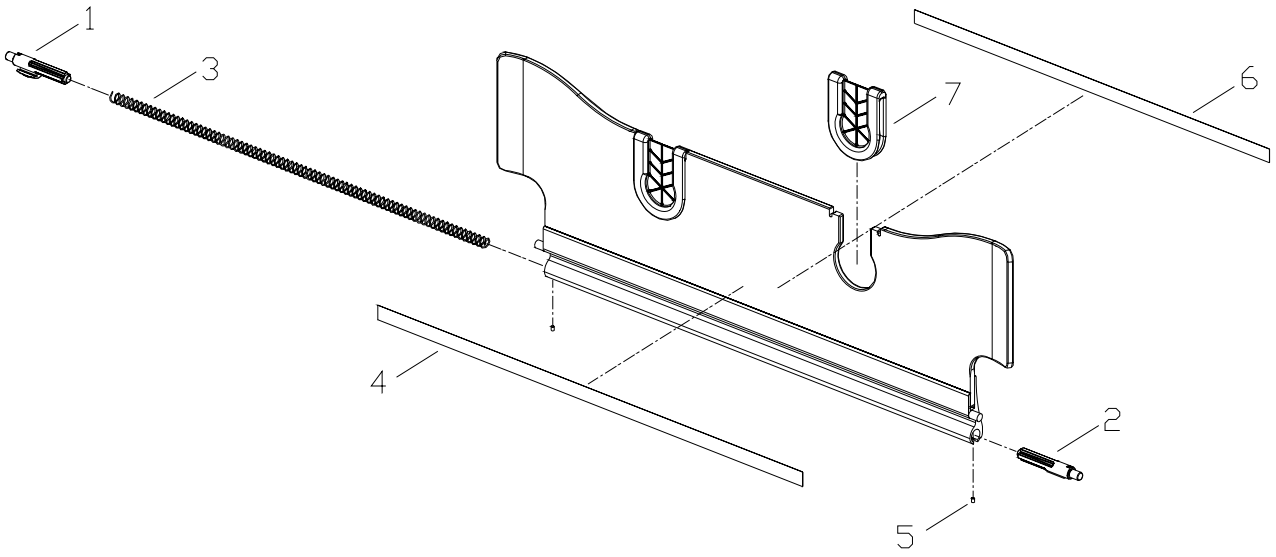
043042193 Bassinet (3) Side with inserts Spare

NOTE: This is a lift and fold side panel which will only fit on bassinets version 2.5 and greater.

Bassinet (3) Side Panel with Inserts Parts List

Item	*Part Number*	*Description*
1	694042168	Axle Sliding (3)
2	694042169	Axle Sliding Machined (3)
3	661042031	Spring Bassinet Side (3)
4	183042046	Label Blank Side Panel (3)
5	614040287	Screw M3 x 4 Grub Knurled
6	183041870	Sticker X-Ray Tray End
7	694042132	Insert Tube Holder - Bassinet side

Bassinet (3) Side Panel with Inserts Assembly Diagram



7.9.3 043042191/043042192* Bassinet (3) Blank Side Panel (*Long)

Order Number and Description:

043042191 Bassinet (3) Side Blank Spare

043042192 Bassinet (3) Side Long Spare

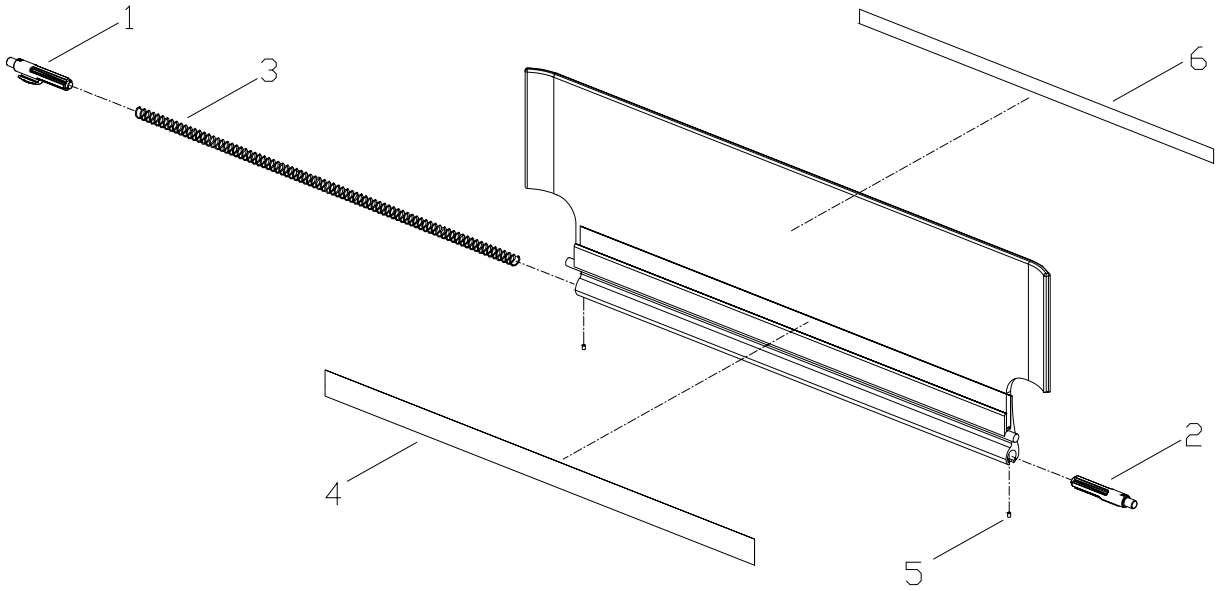
NOTE: These are lift and fold side panels that will only fit on bassinets version 2.5 and greater.

Bassinet (3) Blank Side Panel Parts List

Item	*Part Number*	*Description*
1	694042168	Axle Sliding (3)
2	694042169	Axle Sliding Machined (3)
3	661042031	Spring Bassinet Side (3)
	*(661042032**	*Spring Bassinet Side (3) Long)**
4	183042046	Label Blank Side Panel (3)
	*(183042047**	*Label Blank Side Panel (3) Long)**
5	614040287	Screw M3 x 4 Grub Knurled
6	183041869	Sticker X-Ray Tray Side

* Denotes substitute part numbers for long side panels (043042192) as used on the 900IW212 Long Bassinet (3)

Bassinet (3) Blank Side Panel Assembly Diagram



7.9.4 043042388 Bassinet (3) Side Panel Long with Inserts

Order Number and Description:

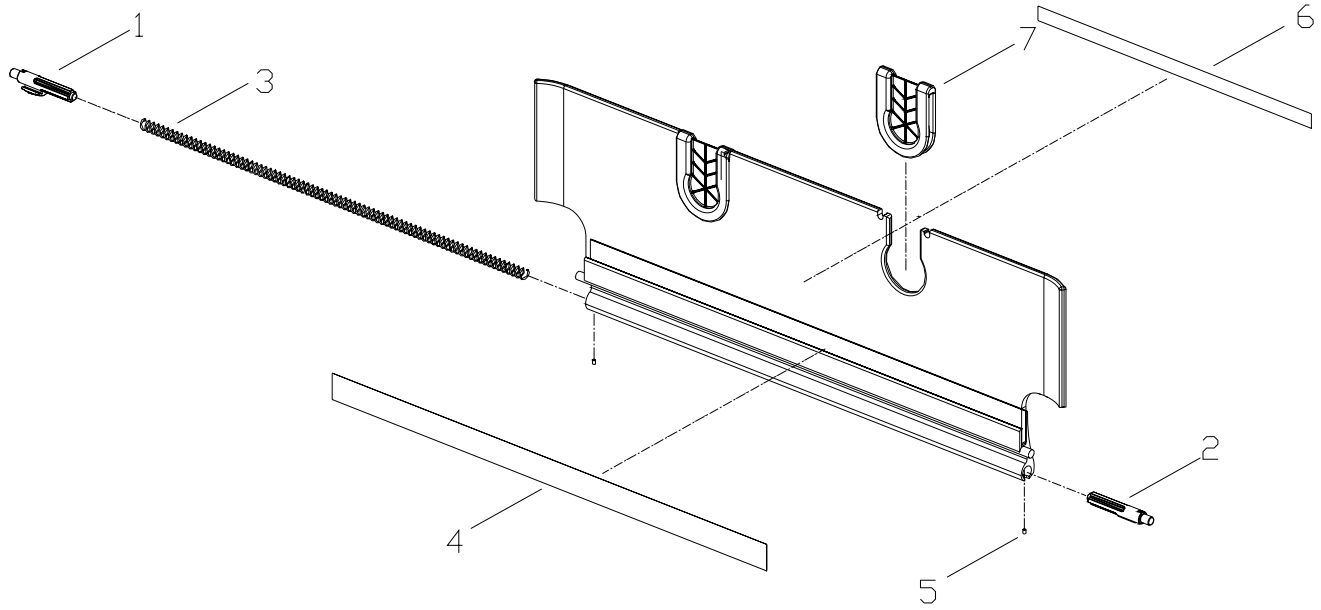
043042388 Bassinet (3) Side Spare Long with inserts

NOTE: This is a lift and fold side panel that will only fit on long bassinets version 2.5 and greater.

Bassinet (3) Side Panel Long with Inserts Parts List

Item	*Part Number*	*Description*
1	694042168	Axle Sliding (3)
2	694042169	Axle Sliding Machined (3)
3	661042032	Spring Bassinet Side (3) Long
4	183042047	Label Blank Side Panel (3) Long
5	614040287	Screw M3 x 4 Grub Knurled
6	183041869	Sticker X-Ray Tray Side
7	694042132	Insert Tube Holder - Bassinet side

Bassinet (3) Side Panel Long with Inserts Assembly Diagram



7.9.5 043042510 Bassinet (3) Side Panel High Front

Side Panel is 23cm high as measured from the bassinet & 25.5cm at the end.

Order Number and Description:

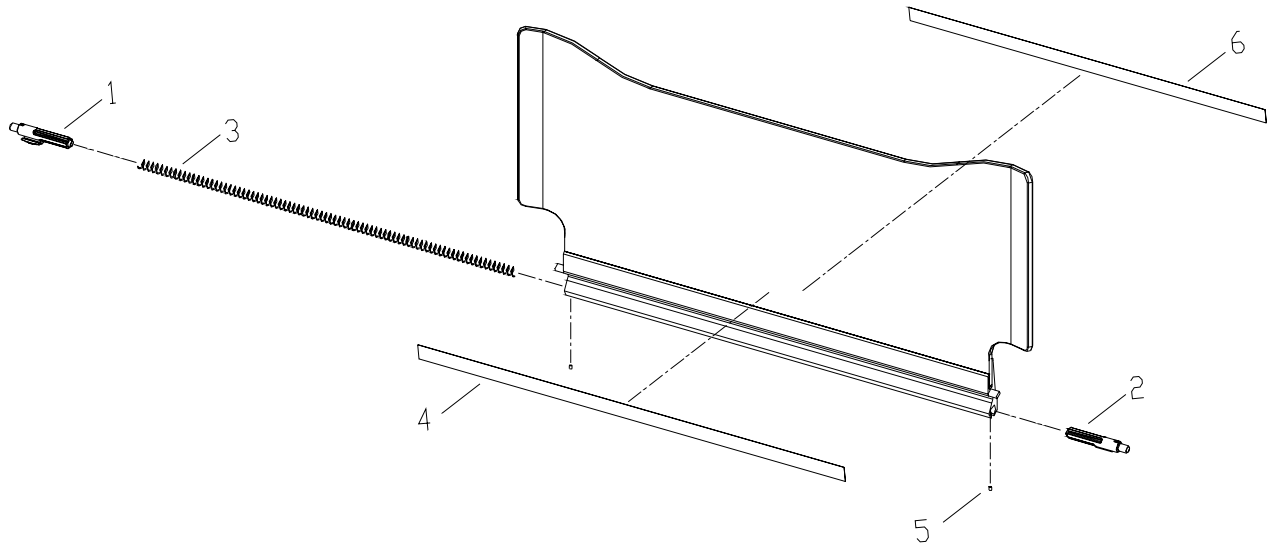
043042510 Bassinet (3) Side Panel High Front - Spare

NOTE: This is a lift and fold side panel that will only fit on bassinets version 2.5 and greater.

Bassinet (3) Side Panel High Front Parts List

Item	*Part Number*	*Description*
1	694042168	Axle Sliding (3)
2	694042169	Axle Sliding Machined (3)
3	661042031	Spring Bassinet Side (3)
4	183042046	Label Blank Side Panel (3)
5	614040287	Screw M3 x 4 Grub Knurled
6	183041870	Sticker X-Ray Tray End

Bassinet (3) Side Panel High Front Assembly Diagram



7.9.6 043042509/043042561* Bassinet (3) Side Panel High Blank (*Long)

Side panel is 25.5cm high as measured from the bassinet.

Order Number and Description:

043042509 Bassinet (3) Side Panel High Blank - Spare

043042561 Bassinet (3) Side Panel High Blank Long - Spare

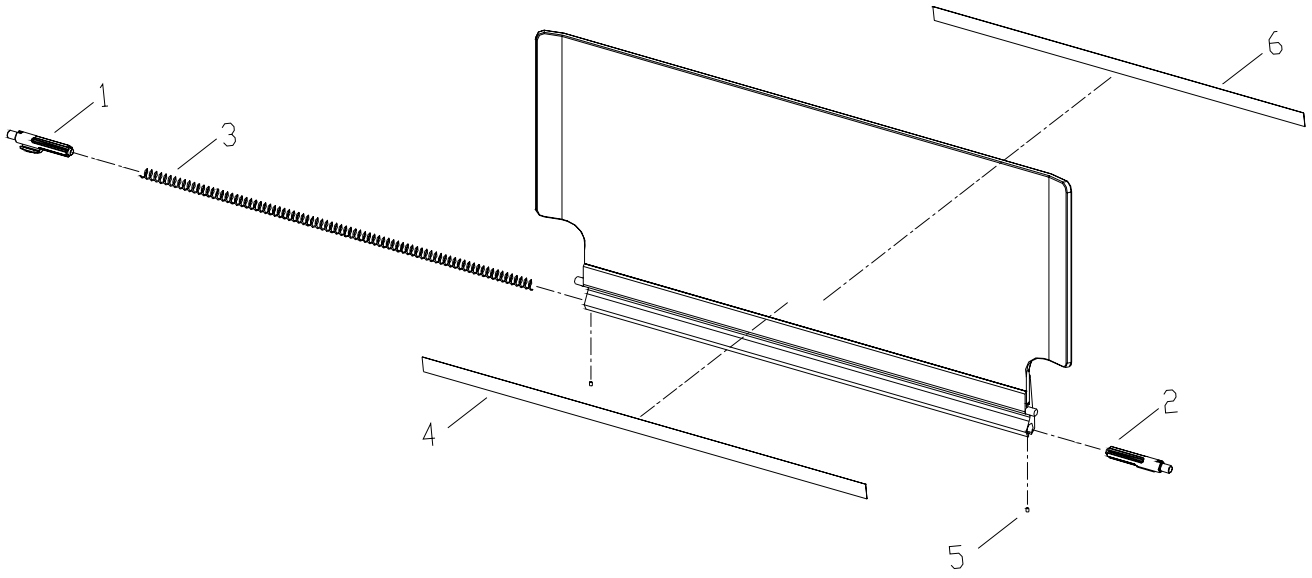
NOTE: This is a lift and fold side panel that will only fit on bassinets version 2.5 and greater.

Bassinet (3) Side Panel High Blank Parts List

Item	*Part Number*	*Description*
1	694042168	Axle Sliding (3)
2	694042169	Axle Sliding Machined (3)
3	661042031	Spring Bassinet Side (3)
	*(661042032**	*Spring Bassinet Side (3) Long)**
4	183042046	Label Blank Side Panel (3)
	*(183042047**	*Label Blank Side Panel (3) Long)**
5	614040287	Screw M3 x 4 Grub Knurled
6	183041869	Sticker X-Ray Tray Side

* Denotes substitute part numbers for long side panels (043042xxx) as used on the 900IW212 Long Bassinet (3)

Bassinet (3) Side Panel High Blank Assembly Diagram



7.9.7 043042511 Bassinet (3) Side Panel High Back with Inserts

Order Number and Description:

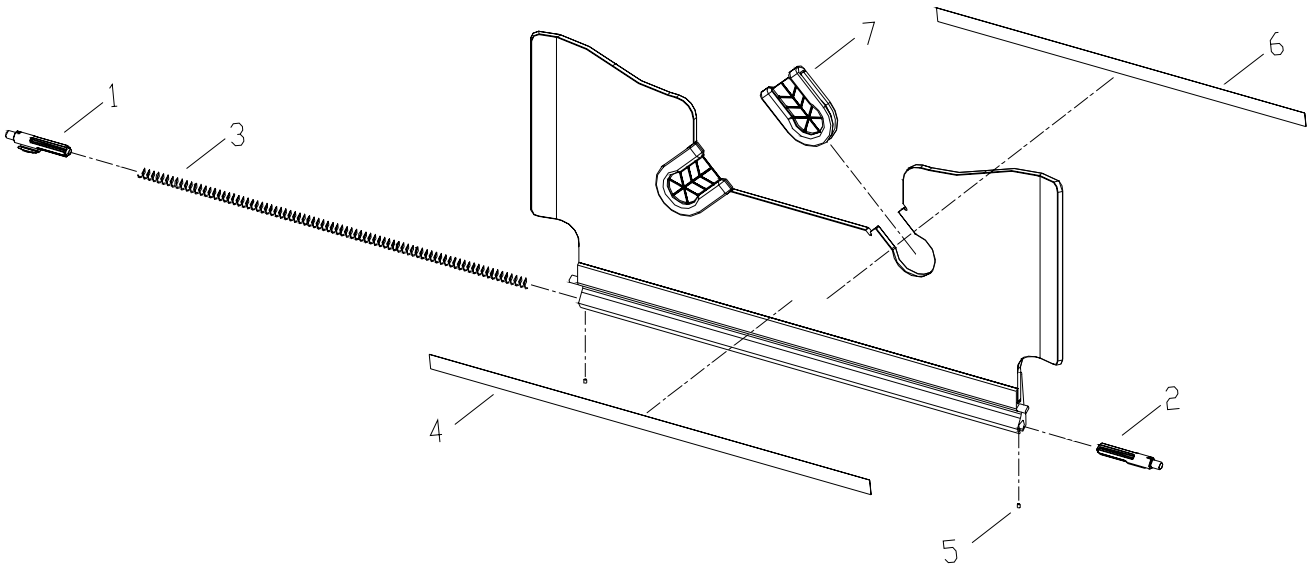
043042511 Bassinet (3) Side Panel High Back with Inserts - Spare

NOTE: This is a lift and fold side panel that will only fit on bassinets version 2.5 and greater.

Bassinet (3) Side Panel High Back Parts List

Item	*Part Number*	*Description*
1	694042168	Axle Sliding (3)
2	694042169	Axle Sliding Machined (3)
3	661042031	Spring Bassinet Side (3)
4	183042046	Label Blank Side Panel (3)
5	614040287	Screw M3 x 4 Grub Knurled
6	183041870	Sticker X-Ray Tray End
7	694042132	Insert Tube Holder - Bassinet side

Bassinet (3) Side Panel High Back Assembly Diagram



7.9.8 043042201/043042202* Bassinet (2) Side Panel with Seal (*Long)

Order Number and Description:

043042201 Bassinet (2) Side with Seal - Spare

043042202 Bassinet (2) Side Long with Seal - Spare

NOTE: These are hands free side panels designed for version 2.0 bassinets with high profile corner caps (694042167) containing CornerGrip Tube holders (694042133) and a plastic underlay (254040071).

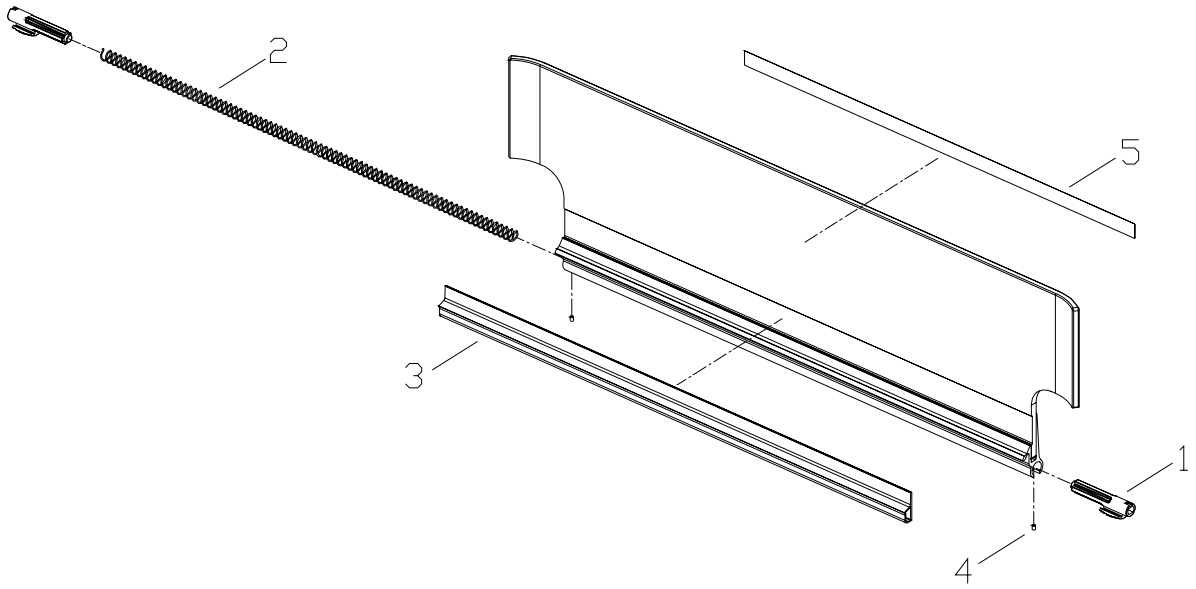
Bassinet (2) Side Panel Parts List

Item	*Part Number*	*Description*
1	693041415	Axle Sliding
2	662040057	Spring Side Bassinet IW2G
	*(662040068**	*Spring Side Bassinet Long)**
3	693042012	Extrusion damper/seal
	*(693042018**	*Extrusion damper/seal – long)**
4	614040287	Screw M3 x 4 Grub Knurled
5	183041869	Sticker X-Ray Tray Side
	183041870**	Sticker X-Ray Tray End**

* Denotes substitute part numbers for long side panels (043042202) as used on the 900IW212 Long Bassinet

** Supplied with 043042201 spare side panels only.

Bassinet (2) Side Panel Assembly Diagram



7.9.9 043042096/043042095* Bassinet Side Panel with Seal (*Long)

Order Number and Description:

043042096 Bassinet Side with Seal - Spare

043042095 Bassinet Side Long with Seal - Spare

NOTE: These are hands free side panels designed for version 2.0 bassinets with standard corner caps (641040819) and a plastic mattress underlay (254040071). They include a Santoprene extrusion sealing strip. These side panels are NOT suitable for version 1.0 bassinets with fabric underlays (254040068).

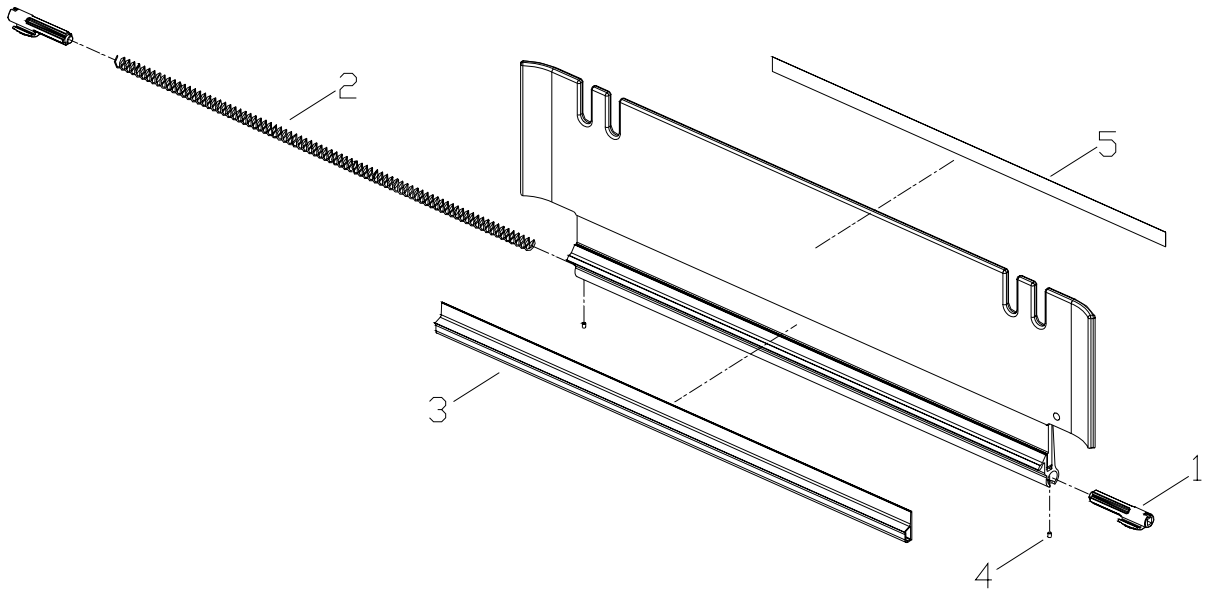
Bassinet Side Panel Parts List

Item	*Part Number*	*Description*
1	693041415	Axle Sliding
2	662040057	Spring Side Bassinet IW2G
	*(662040068**	*Spring Side Bassinet Long)**
3	693042012	Extrusion damper/seal
	*(693042018**	*Extrusion damper/seal – long)**
4	614040287	Screw M3 x 4 Grub Knurled
5	183041869	Sticker X-Ray Tray Side
	183041870**	Sticker X-Ray Tray End**

* Denotes substitute part numbers for long side panels (043042095) as used on the 900IW212 Long Bassinet

** Supplied with 043042096 spare side panels only.

Bassinet Side Panel Assembly Diagram



7.9.10 043041062/043041332* Bassinet Side Panel No Seal (*Long)

Order Number and Description:

043041062 Bassinet Side No Seal Spare

043041332 Bassinet Side Long No Seal Spare

NOTE: These are hands free side panels designed for version 1.0 bassinets which have standard corner caps (641040819) and a fabric underlay (254040068).

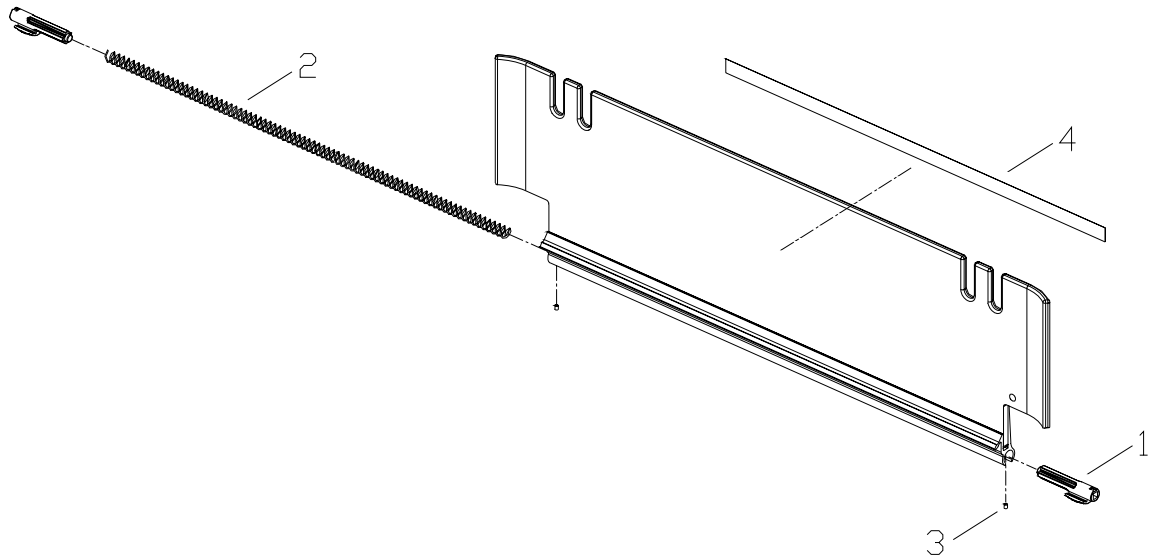
Bassinet Side No Seal Parts List

Item	*Part Number*	*Description*
1	693041415	Axle Sliding
2	662040057	Spring Side Bassinet IW2G
	*(662040068**	*Spring Side Bassinet Long)**
3	614040287	Screw M3 x 4 Grub Knurled
4	183041869	Sticker X-Ray Tray Side
	183041870**	Sticker X-Ray Tray End**

* Denotes substitute part number for long side panels (043041332) as used on the 900IW212 Long Bassinet

** Supplied with 043041062 spare side panels only.

Bassinet Side No Seal Assembly Diagram



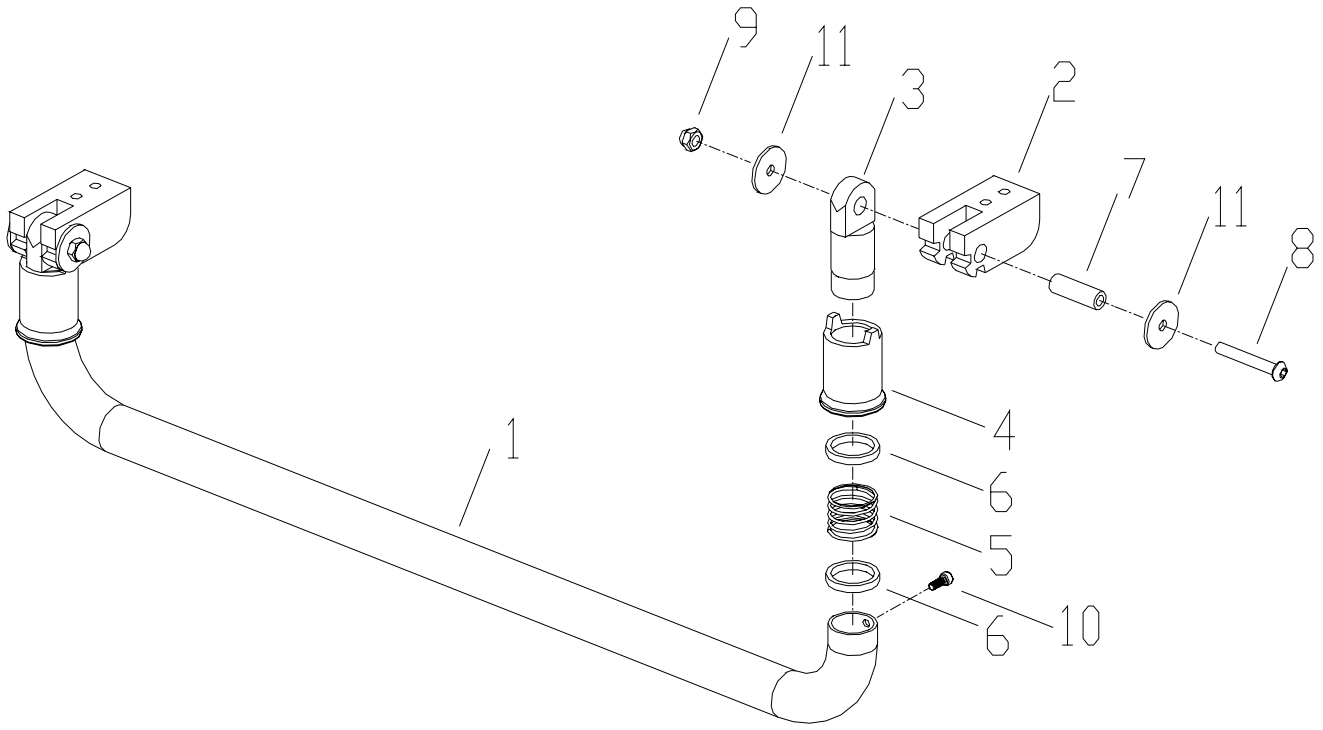
7.10 043042190 Bassinet Transport Handle Assembly

The transport handle can only be fitted to CosyCot™ models with bassinets versions 2.5 and greater.

7.10.1 Bassinet Transport Handle Parts List

Item	*Part Number*	*Description*
1	642042030	Handle Tubular SS
2	642042033	Bracket Hinge Handle
3	642042031	Plug Hinge Handle SS
4	642042032	Collar Release Handle SS
5	661042028	Spring Push Handle
6	694042143	Bush Acetal Slider Handle
7	694042144	Bush Acetal Hinge Handle
8	614042005	Screw M6 x 40 Button Head SS
9	621040521	Nut M6 Dome Brass Chrome Plated
10	614042007	Screw M4 x 8 Low Profile
11	694042180	Washer Acetal Hinge Handle

7.10.2 Bassinet Transport Handle Assembly Diagram



7.11 Bassinet Arms and Brake Assembly

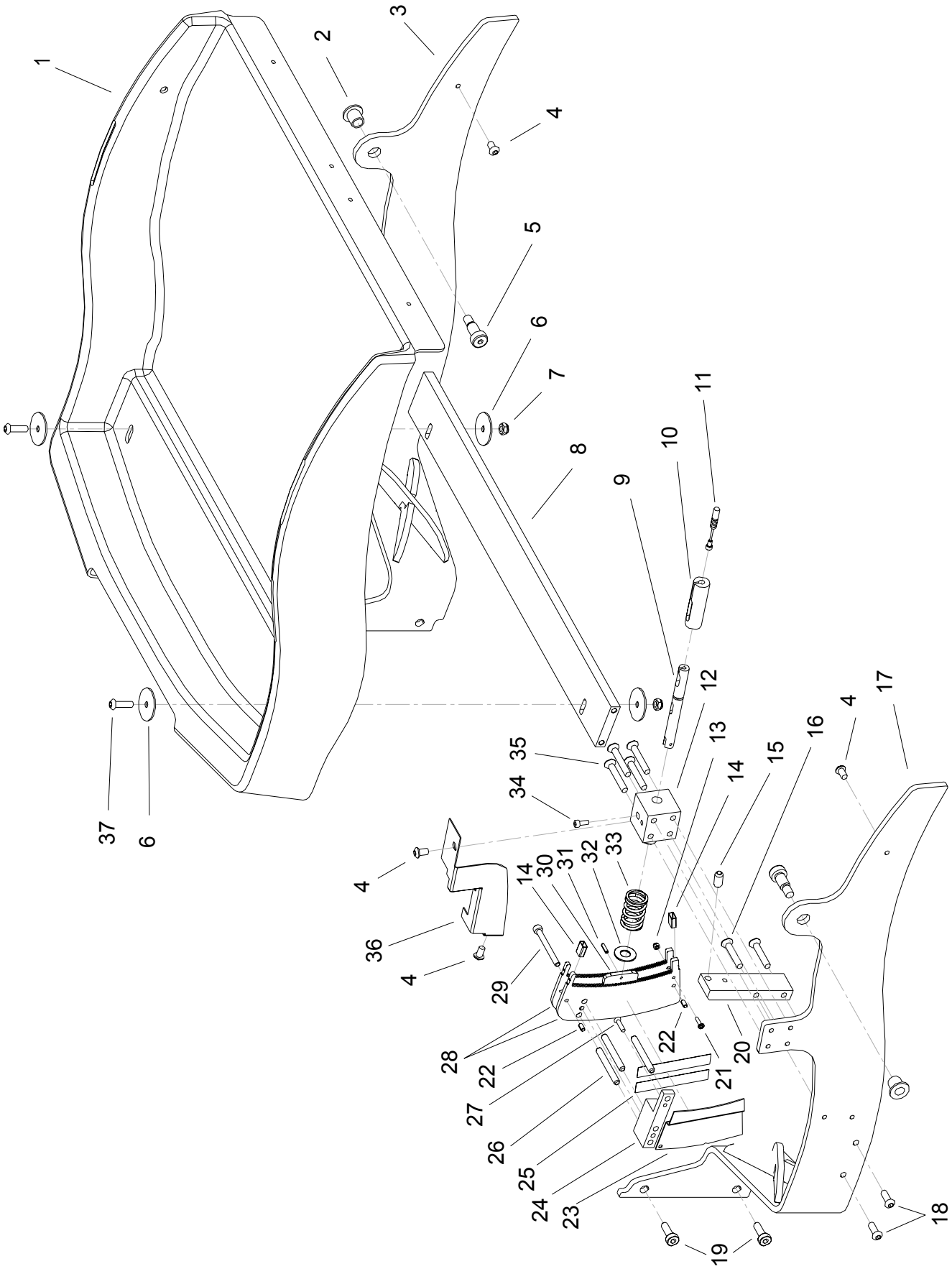
Manufactured from February 2004

7.11.1 Bassinet Arms and Brake Assembly Parts List

Item	*Part Number*	*Description*
1	694042307	Lid Storage Drawer
2	64242076	Bush Bassinet
3	642042065	Arm Warmer – Left
4	614040254	Screw M6x10 Allen S/S Button HD
5	614042335	Bolt Shoulder M8x10x16 ZP
6	622040153	Washer M6x32 S/S
7	621040524	Nut M6 Nyloc ZPS
8	642042075	Brace - Arm Warmer
9	642042074	Rod Brake Actuator
10	642042071	Spacer - Brake Cable
11	661042045	Cable Brake – Std Bassinet
	661042046*	Cable Brake – Long Bassinet*
12	642042073	Block – Brake Support
13	621040506	Nut M3 Nyloc
14	331042074	Heatshrink Tubing DWTC Clear
15	661042051	Ball Stop Plastic
16	614042333	Screw M6x35 CSK HD S/S Allen
17	642042066	Arm Warmer – Right
18	614040230	Screw M6x16 Allen S/S Butn HD
19	614040309	Screw M8x20 Cap Low Profile
20	642042072	Bracket Brake Ballstop Support
21	614040036	Screw M3x12 Pan Pozi ZN/ST
22	621042016	Pin Bissell Dia. 4x8 S/S
23	642042091	Safety Guard – Brake Rack
24	642042070	Spacer Block – Brake Rack
25	188042001	Tape 3M VHB9473 12.7x54.8m
26	661042055	Pin Dowel Dia. 6x50 S/S
27	610042037	Screw M4x16 CSK Phlps SS
28	642042080	Brake Rack – Fixed Section
29	614040336	Screw M5x50 Cap SS
30	642042081	Brake Rack – Moveable Section
31	661042049	Rollpin Dia 3x12 Bissel SS
32	621042011	Washer M10x21x1.25 Flat SS
33	661042047	Spring Bassinet Brake
34	610042036	Screw M4x10 Allen HD SS
35	614040213	Screw M6x40 CSK Allen Head S/S
36	642042092	Safety Guard – Brake Mechanism
37	614042332	Screw M6x20 Allen S/S Butn HD

* Denotes substitute part number for long bassinets

7.11.2 Bassinet Arms and Brake Assembly Diagram



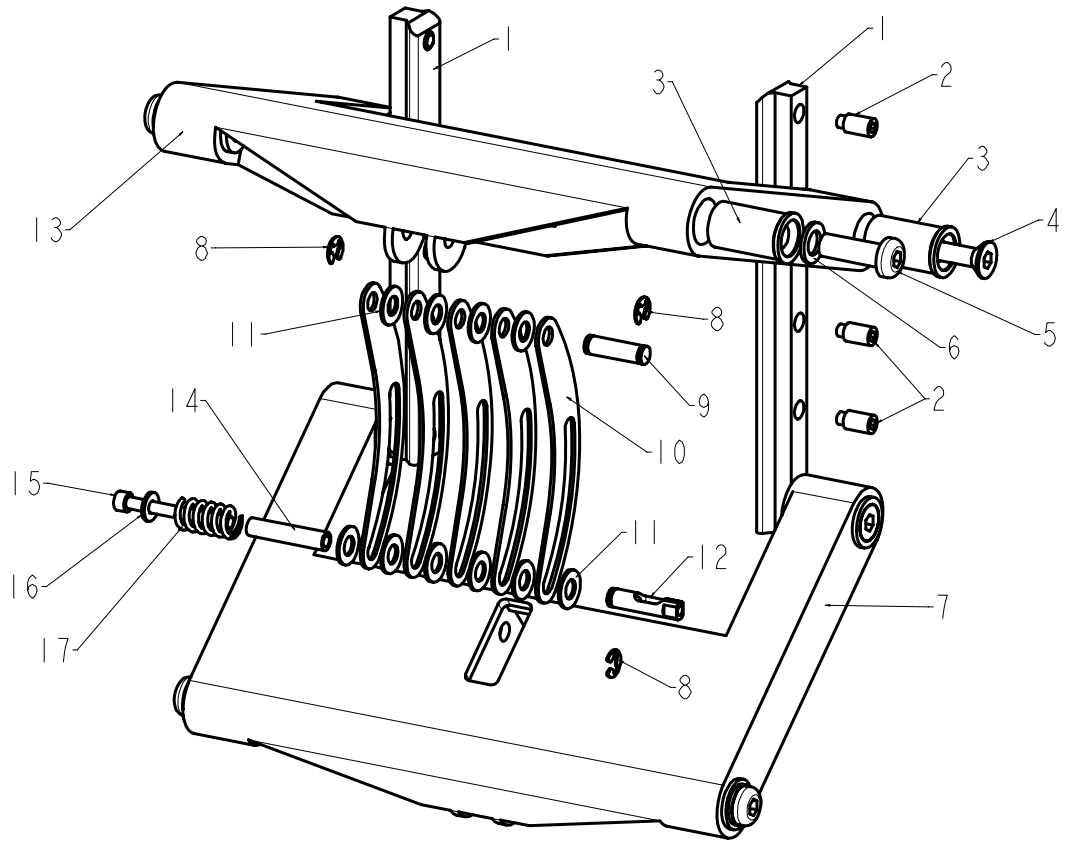
7.12 Bassinet Tilt Link Assembly

Manufactured from Jan 1997 to February 2004

7.12.1 Bassinet Tilt Link Assembly Parts List

Item	*Part Number*	*Description*
1	641040738	Extrusion Slider Dovetail 0.2m
2	614040326	Screw M8 x 16 Grub Hex Dog Pnt
3	653040123	Bush M10 x 20 x 35
4	614040335	Screw M8 x 50 CSK Allen SS304
5	614040337	Screw M10 x 30 Allen SS Button Head
6	622040163	Washer M10 x 18 x 1.6 Flat SS
7	693040756	Link 4 Bar Lower Column IW2G
8	625060032	Circlip Ellison E Type 6mm SS
9	651040216	Pin M8 x 28 SS
10	641040802	Slider Tilt Brake SS
11	100556	Washer M8 x 17 Flat SS304
12	651040215	Actuator Brake Bassinet Tilt Brass
13	693040755	Link 4 Bar Upper Column IW2G
14	693041432	Spacer Acetal 8 x 5 x 37mm
15	614040336	Screw M5 x 50 Cap SS
16	622040508	Washer M5 x 12 OD 1.2mm Thick ZP
17	662050071	Spring Bassinet Tilt

7.12.2 Bassinet Tilt Link Assembly Diagram



PART 8: IW93x/95x CosyCot™ Base Assembly

8.1.1 IW93x/95x CosyCot™ Base Assembly Change History

Preset Height Base

Until February 2004 this base was constructed the same as the electric base with the actuator replaced by a solid bar with provision for 3 set heights.

From February 2004 the linking rods, ball joints and central pivot arm were replaced by a single bar (642042068) with provision for 2 set heights. The leg assembly remains the same.

Column Mounting Holes

The original M8 bolts used up until March 1998 for fixing the column to the base were replaced with a separate stud (614040859) which is fixed into the lower column and a special M8 x 16 screw (614040858). This change is in conjunction with a change to the base assembly and the studs will only fit into these bases (with ∅12.8 mm mounting holes). For earlier bases a replacement bolt (614040346) is available.

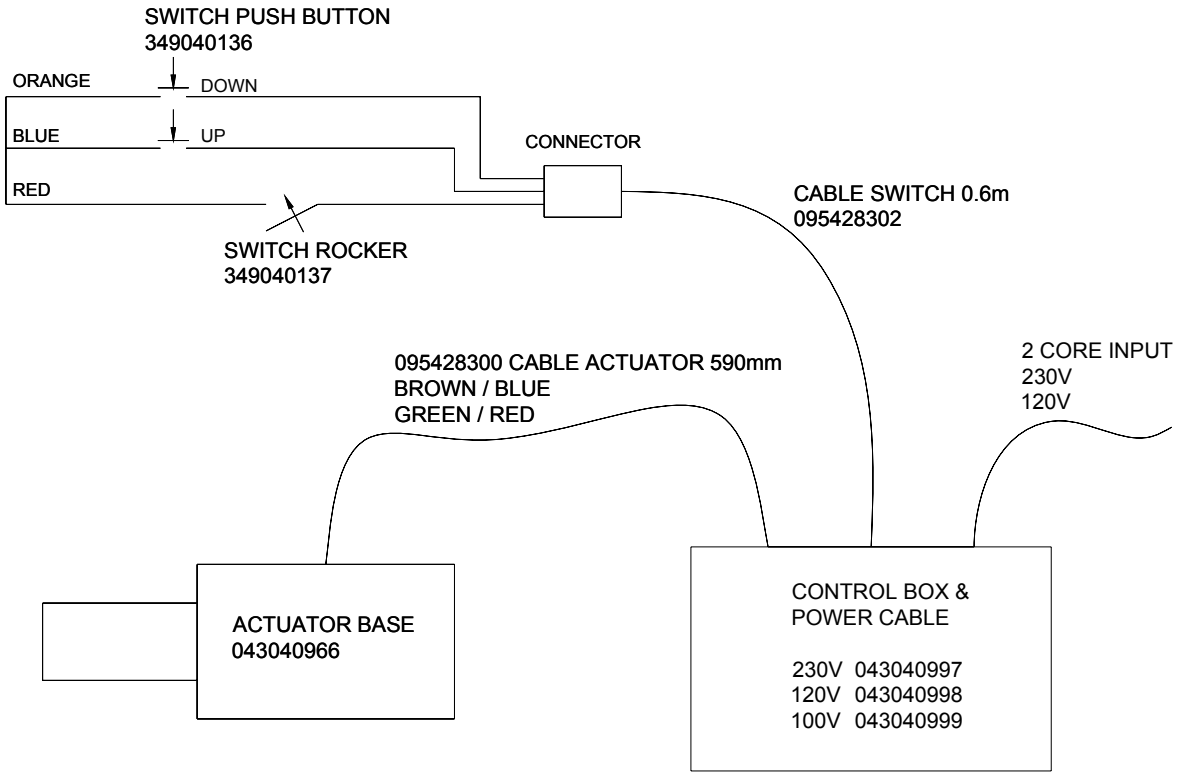
Link Arms

Early versions of the base assembly had adjustable link arms that were superseded by a flat bar style non-adjustable link arm (651040194) in December 1997.

Castors

From July 1998 the 125mm single wheel castors were replaced with four lockable 100mm dual castors (665040015). Castor set 043041239 is a kit containing four dual castors for upgrades.

8.1.2 Elevator Base System Wiring Diagram



8.1.3 IW93x/95x CosyCot™ Base Assembly Parts List

Item	*Part Number*	*Description*
1	648040147	Base frame
2	696040175	Leg left plastic
3	696040174	Leg right plastic (holes for switches available on request)
4	665040015	Castor twin wheel 100 mm locking
5	693040725	Foot leg plastic
6	693040757	Bracket parallel link foot
7	641040828	Plate security circlip foot
8	651040194	Rod parallel linkage
9	641040778	Bracket weld tee nut M8
10	100498	Nut M8 Nyloc
11	614040858	Screw M8x long head
12	651040193	Rod pivot leg 10 mm
13	614040320	Screw M8x55 button head
14	625060030	Circlip Ellison E type 8 mm
15	043040966	Actuator base height adjustment
16	043040997	Control box and power cable for 230V models
	043040998	Control box and power cable for 120V models
	043040999	Control box and power cable for 100V models
17	095428300	Cable actuator 590 mm
18	095428302	Cable switch 0.6m
19	668040009	Link ball M8 left hand
20	668040010	Link ball M8 right hand
21	651040207	Rod straight actuator
22	651040208	Rod curved actuator
23	614040160	Screw M5x16 pan panpozi
24	100045	Rubber grommet R314/13
25	651040209	Pin cylinder base elevator
26	651040206	Arm pivot actuator
27	622040525	Washer 14.5 x 32 x 3.2
28	622040624	Washer spring 12 mm
29	614040614	Screw M12x25 Allen s/s button
30	621040916	Nut M8 Hex
31	349040137	Switch rocker 10A slim line
32	349040136	Switch push button ITW59-111 sealed (with nut)
33	696040173	Cable clip JP16100
34	625060030	Circlip Ellison E type 8 mm
35	625060035	Clip edge panel
36	643040076	Cover base bottom
37	183041884	Label elevator base

Parts for Non-Electric bases made prior to February 2004

38	651040214	Bar lock bracket to arm (replaces 15 on non-electric elevator models)
39	641041482	Screw M10 x 25 (replaces 25 on non-electric elevator models)
40	621040540	Nut M10 Nyloc

Parts for Non-Electric bases made after February 2004, these replace parts 15-37

41	642042068	Bar Adjustment Preset Base
42	622040624	Washer spring 12 mm
43	614040614	Screw M12x25 Allen s/s button
44	610042035	Screw M8x25 CSK

NOTE: Item 4 available as set of 4, Part No. 043041239

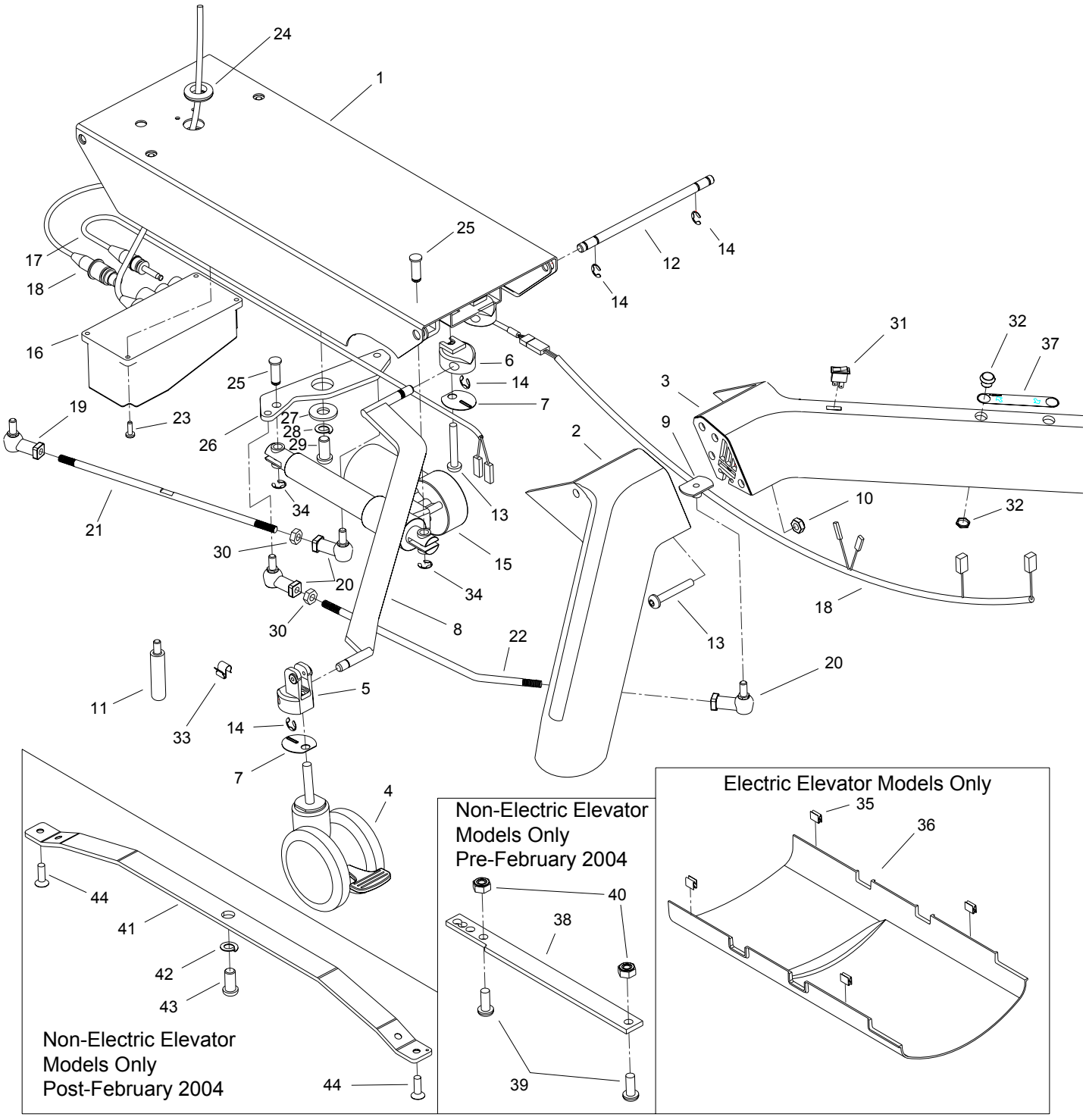
NOTE: Item 26 is available as a replacement kit 043042713 (x5) and 043042714 (x1)

NOTE: Complete Base assembly available as Part No.

043041121	Fixed height
043041122 230V	actuator
043041123 120V	actuator
043041124 100V	actuator

NOTE: To adjust preset base refer 3.6 Service Procedures

8.1.4 IW93x/95x CosyCot™ Base Assembly Diagram

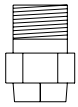


PART 9: Gas Accessories

WARNING **Many of our gas accessories are used with oxygen, which poses a serious fire hazard. Ensure that all dealings with gas accessories are performed in a clean environment and extra care is taken to ensure that no oil, glues or particles contaminate the gas systems. Particles that enter a high-pressure oxygen enriched environment will combust at much lower temperatures than normal.**

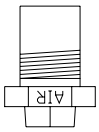
Never oil or grease oxygen equipment. Both oil and grease oxidise readily and in the presence of oxygen will burn violently.

9.1.1 Gas Fitting Identification



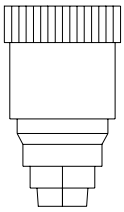
DIAMETER INDEX SAFETY SYSTEM (DISS) OXYGEN FITTINGS

655040070 – Outlet/Demand valve (prominent central valve plunger)
655040073 – Inlet/Check valve (recessed central valve plunger)



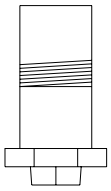
DISS AIR FITTINGS

655040080 – Outlet/Demand valve (prominent central valve plunger)
655040104 – Inlet/Check valve (recessed central valve plunger)



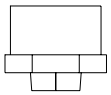
SCHRADER OUTLET VALVES

655040105 – Outlet/Demand valve – AIR (marked AIR)
655040106 – Outlet/Demand valve – OXYGEN (marked OXY)



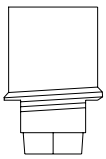
NON-INTERCHANGEABLE SCREW-THREADED (NIST) INLET WITH CHECK VALVES

655040085 – Inlet/Check valve – OXYGEN (marked OXY)



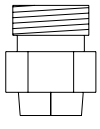
SLEEVE INDEX SYSTEM (AUST) GAS FITTINGS

655040102 – Outlet valve – OXYGEN (prominent central valve plunger)
655040103 – Outlet valve – AIR (prominent central valve plunger)
655040109 – Inlet Valve – AIR (recessed central valve plunger)
655040110 – Inlet Valve – OXYGEN (recessed central valve plunger)



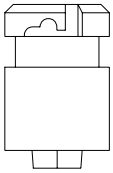
NIST INLET FITTING (no check valve)

655040440 –Valve Inlet Oxy NIST
Used on 900IW153K only



SUCTION OUTLET FITTING (no check valve)

655040112 –Valve Outlet Oxygen UK
Used on 900IW153K only



FRENCH INLET VALVES ASSOCIATION FRANCAISE DE NORMALISTION (AFNOR)

655040116 –Valve Inlet Oxy French (marked O_2)

9.1.2 Internal Fittings

(Swagelok™ Fittings SUPERSEEDED September 2001)

Up until September 2001 all internal connections on the manifolds and Flowmeter Modules were made using a number of different Swagelok™ fittings. These are brass connectors, which allow gas tight seals to be easily established, disconnected and re-established many times. The fittings come in completely assembled and shouldn't be disassembled prior to use as this can lead to contamination and dirt entering into the fitting, causing leaks and possibly serious damage to other gas accessories.

SMC One-Touch Fittings

From September 2001 the Swagelok ™ fittings were replaced with SMC one-touch push in fittings. These allow connections to be established quickly and without imperial spanners. A larger bore tubing (6mm) was also introduced and this is colour coded (clear for oxygen and black for air). The tubing connects with fittings that have correspondingly coloured caps (i.e. black for air).

All the old Swagelok™ parts have direct replacements from the SMC™ range as shown in the table.

Superseded Swagelok™ Parts		SMC™ Parts	
641040762	CONNECTOR ELBOW 1/8" TO ¼"NPT	661042014	CONNECTOR MALE ELBOW 6x1/4"
498040144	CONNECTOR MALE 1/8" NPT	661042015	CONNECTOR UNIFIT MALE 6x1/8"
498040152	CONNECTOR RUN TEE 1/8" NPT	661042016	CONNECTOR SMC RUN TEE 6mm
693040782	PLUG SWAGELOK 1/8" TUBE	661042017	CONNECTOR PLUG 6mm SMC
498040143	TUBE 1/8" PFA IW2G 100FT ROLL	661042019	GAS TUBE POLYURETHANE CLR 6mm
		661042018	GAS TUBE POLYURETHANE BLK 6mm

A replacement flowmeter module with Swagelok fittings can be manufactured by special request.

9.1.3 Gas Supply Module 900IW10x Upgrade Kit

To fix a problem with Version 1 Gas Supply modules where the o-ring is displaced an upgrade kit is available to upgrade the Gas Supply Modules to Version 2

NOTE: Version 2 Mount Cylinder Blocks have a dot engraved on the top after the "Oxygen" or "Air" label.
Version 3 Mount Cylinder Blocks have 2 dots engraved on the top, before and after the "Oxygen" or "Air" label.

043042531 Kit Gas Upgrade Oxy

Contains		**Replaces Version 1 parts**	
642042089	Mount Cylinder Oxygen Ver2	641040759	Mount Cylinder Oxygen IW2G
694042413	Seal O-ring V11x2	693040734	O-Ring 7/32 x 11/32 ID 1/16
642042088	Poppet Gas Manifold	661040012	Ball Ø6mm Brass
622040157	Washer Yoke BODOK	622040157	Washer Yoke BODOK
694042414	Seal O-Ring V3x1		

043042532 Kit Gas Upgrade Oxy/Air

Contains		**Replaces Version 1 parts**	
642042089	Mount Cylinder Oxygen Ver 2	641040759	Mount Cylinder Oxygen IW2G
642042090	Mount Cylinder Air Ver 2	641040758	Mount Cylinder Air IW2G
694042413	Seal O-ring V11x2	693040734	O-Ring 7/32 x 11/32 ID 1/16
642042088	Poppet Gas Manifold	661040012	Ball Ø6mm Brass
622040157	Washer Yoke BODOK	622040157	Washer Yoke BODOK
694042414	Seal O-Ring V3x1		

9.2 Gas Accessory Service Information

9.2.1 Leak Testing

For 900IW10X Gas Supply Modules a leak test can be performed using the cylinder pressure gauges as follows:

- Do a visual check on all fittings and ensure all flowmeters are turned off.
- Disconnect all gas hoses and accessories from the inlets and outlets. Ensure the flowmeter outlets are blocked.
- Prior to connection to any cylinder momentarily open and close the cylinder valve to expel any foreign matter.
- Connect a cylinder to the appropriate gas yoke ensuring that a Bodok washer (622040157) is in place and in good condition.

NOTE: An air cylinder will also need to be connected if testing a 900IW102/104/106

- Open the cylinder valve S-L-O-W-L-Y and charge up the gas system to preferably over 1500psi (10.3Mpa).
- Check for any audible leaks before closing off the cylinder valve. The cylinder can now be removed from the yoke.
- Leave for fifteen minutes before checking the appropriate cylinder pressure gauge for any evidence of leakage.
- If a leak is detected use liquid leak detector around the fittings to the identify leak point which will create bubbles and repair as necessary.

For other gas accessories a separate pressure gauge should be connected to one of the outlet fittings and the system pressurised to at least 50psi (345kPa).

- Check for audible leaks before closing off the gas supply and leaving for 15 minutes.
- Check to see that leakage is less than 4psi after this time.
- If a leak is detected use liquid leak detector around the fittings to the identify leak point which will create bubbles and repair as necessary.

If hoses are to be tested the gas supply will need to be able to be isolated from the hose.

9.2.2 Adjusting Regulator Output Pressure on 900IW101-106 Gas Supply Manifolds

The set pressure should be between 50 and 60psi. Generally the set pressure should be 3-5psi below the hospital wall supply to ensure that the wall supply will be utilised before the cylinder.

1. Attach a calibrated 0-100psi pressure gauge to one of the low pressure outlets on the manifold.
2. Prior to connection of the cylinder momentarily open and close the cylinder valve to expel any foreign matter.
3. Connect a cylinder to the appropriate gas yoke ensuring that a Bodok washer (622040157) is in place and in good condition.
4. Open the cylinder valve S-L-O-W-L-Y and charge up the gas system.
5. Gently insert a 6mm Allen Key into the opening on the end of the regulator and lower the set pressure by turning the Allen key anti-clockwise by approximately ½ a turn.

CAUTION Do not insert the Allen Key more than 30mm into the regulator, if the Allen key hits the bottom of the hole you have inserted it too far and you may damage the regulator.

6. Bleed some pressure out of the manifold by turning on a flowmeter if fitted or pressing on the central button of one of the gas fittings.
7. Check the calibrated pressure gauge – after bleeding it should read below 50psi.
8. Slowly turn the Allen key clockwise while checking the calibrated pressure gauge until the pressure reads your preferred pressure. If you overshoot the preferred pressure return to step 3 and repeat.

NOTE: For 900IW102/104/106 Gas Supply Oxy/Air Manifolds this procedure must be completed for both Oxygen and Air regulators separately.

9.2.3 Installing Gas Fittings

All external gas fittings for the connection of low-pressure gas hoses have ¼" NPT male threads. This is an American standard tapered thread that seals with assistance from oxygen approved Teflon tape.

⚠ ***WARNING*** **Only Teflon Tape which is "Approved for Oxygen Service" should be used on oxygen gas fittings.**

- Wrap the Teflon seal tape 2-3 times around the threads, leaving 1.5 to 2 ridges exposed at the end of the threads. Wrap in a direction such that the tape is tightened about the fitting when installed.
- The correct torque generally corresponds to 2-3 turns by tool after tightening by hand

NOTE: Be careful, especially when installing 661042014 CONNECTOR MALE ELBOW, not to damage the fittings hex head. A ring spanner or socket should be used.

NOTE: the plastic part of 661042014 CONNECTOR MALE ELBOW can rotate on the metal stud. This allows the fitting to be in the correct orientation to fit into the column regardless of the thread, unlike the superseded Swagelok™ fittings.

UNI-FIT SMC One Touch Fittings (661042015)

- This fitting has a special smaller thread that fits in any female thread. A gasket seals on the chamfer of the thread.
- Tighten the fitting by hand, then give it an additional 1/6 turn with a wrench.
- Excessive tightening may damage the thread portion or deform the gasket and cause gas leakage.

9.2.4 Swagelok™ Tube Installation

These fittings are made of brass and require a 7/16" spanner to service.

Swagelok™ Tube Connection

To create a gas tight seal using the clear 1/8" plastic tubing and a Swagelok™ connector:

- Make sure the end of the clear plastic tube has been cut square and is clean.
- Insert the tubing into the Swagelok™ fitting and push it firmly against the shoulder of the fitting. Make sure the nut is finger tight.
- Tighten the nut 1-1/4 turns with a 7/16" spanner. Ensure the tube doesn't slip out during tightening.

Swagelok™ Tube Reconnection

If a seal has already been made and the nut and tube needs to be reconnected to the main body follow the procedure below:

- Insert tubing into the main body and tighten nut by hand until an increase in resistance is felt. This is the original position.
- Tighten the nut ¼ turn with a 7/16" spanner.

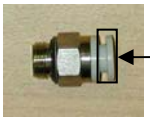
9.2.5 SMC Tube Installation

These fittings are made of a grey plastic and no tools are required to connect or disconnect tubing.

SMC Tube Installation

- Ensure the tube is undamaged and the end has been cut square.
- Hold the tube and push it in slowly, inserting it securely all the way into the fitting.
- Pull the tubing back gently to make sure it will not come out. If the tube is not all the way into the fitting gas leakage or disconnection could occur.

SMC Tube Removal



- Push in evenly on the release button.
- Pull out the tubing while holding down the release button so that it does not pop out. If the release button is not pressed down sufficiently, there will be increased bite on the tubing and it will become more difficult to pull it out.

9.3 498040139 Oxygen Preset Regulator Parts List

In the event of a failure of the regulator replacement parts can be purchased from:

Allied Healthcare Products Inc.
1720 Sublette Avenue
St. Louis MO 63110
Phone: 314 771 2400
Fax: 314 771 2465

WARNING **Oxygen poses a serious fire hazard. Ensure that all dealings with the regulator are performed in a clean environment and extra care is taken to ensure that no oil, glues or particles contaminate the gas systems. Particles that enter a high-pressure oxygen enriched environment will combust at much lower temperatures than normal.**

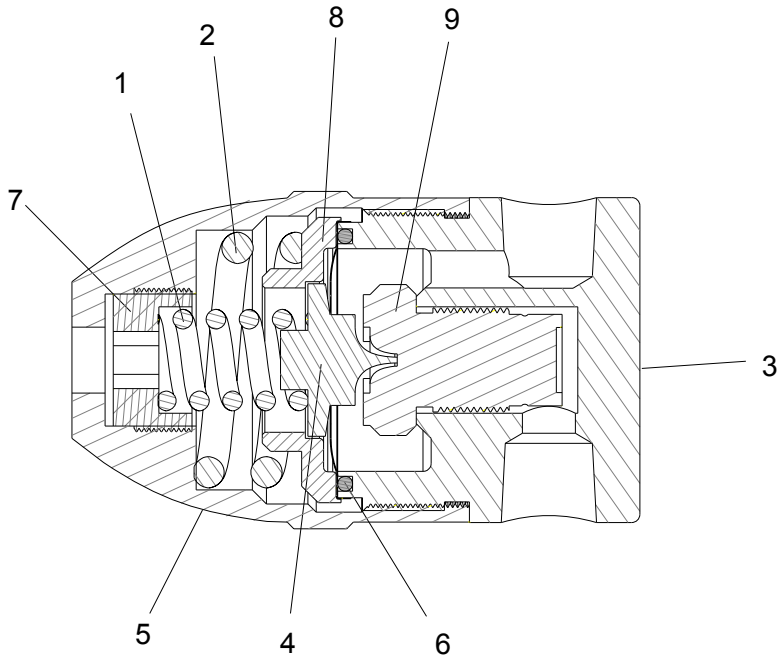
Never oil or grease oxygen equipment. Both oil and grease oxidise readily and in the presence of oxygen will burn violently.

9.3.1 Allied Healthcare Products Inc. Parts List:

Item	*Part Number*	*Description*
1	32-90-0023	Diaphragm Spring
2	32-90-0039	Safety Spring
3	31-2647	Brass Body
4	32-90-0007	Diaphragm Assembly
5	32-90-0237	Preset Cap Assembly
6	32-90-0009	Silicon O-Ring
7	32-90-0016	Diaphragm Spring Button
8	32-90-0066	Diaphragm Plate
9	32-900303	Nozzle Assembly

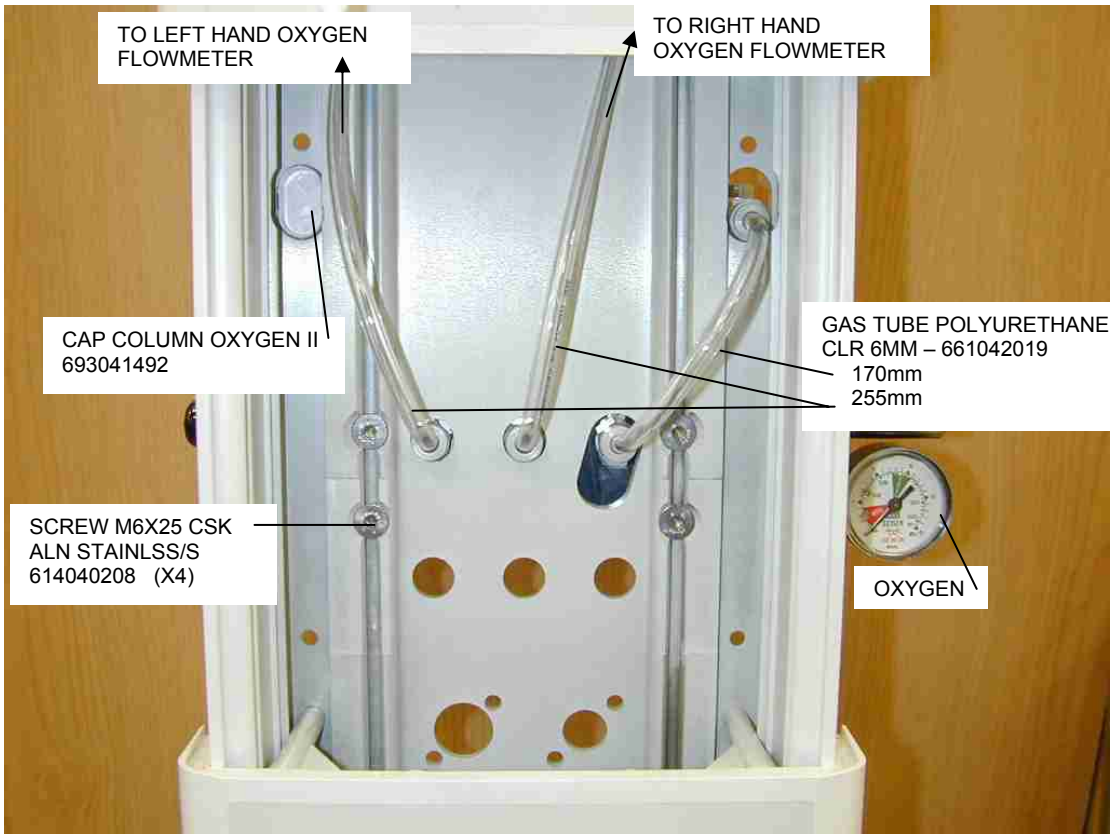
NOTE: 171042008 Spanner Gas Regulator is available from Fisher & Paykel Healthcare to undo Part #5 for servicing.

9.3.2 Oxygen Preset Regulator Diagram (Allied Healthcare Part# 32-10-0320)



9.4 900IW101/103/105 Oxygen Gas Supply Modules

- From September 2001 all the Swagelok™ parts were replaced with fittings from the SMC™ range as shown in the table in section 9.1.2.
- In late 2001 the inlet and outlet valves on all 900IW101/103 and 105 Oxygen Gas Supply Modules were moved to the positions shown in the assembly diagram 9.4.3. The outlet moved to the side from the top of the block and the inlet moved to the bottom from the side of the block. This change allows suction and other units to be placed directly on the gas manifold outlet, and for neater attachment of gas lines into the manifold.

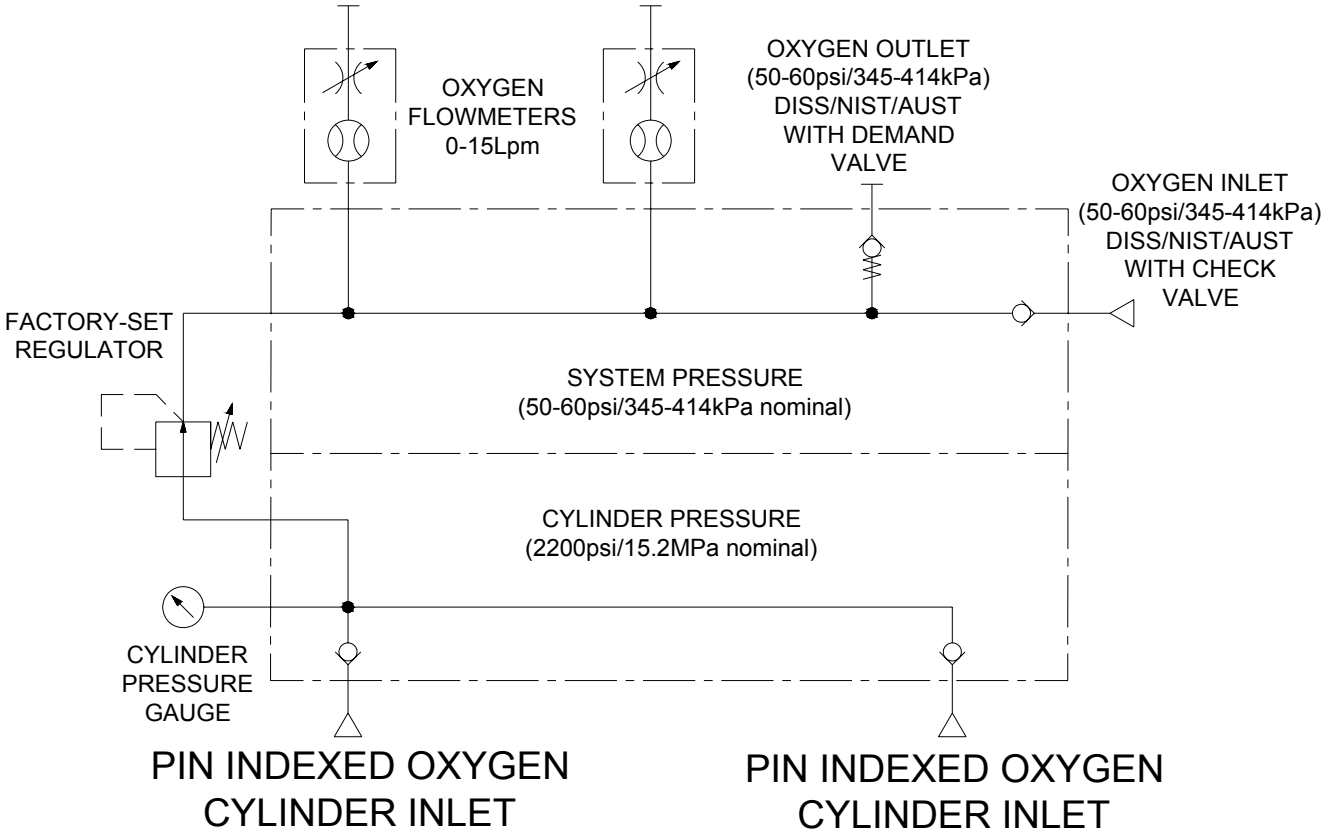


View of internal connections between 900IW101/3/5 Oxygen Gas Supply Modules and 900IW110/112 Oxygen Flowmeter Module

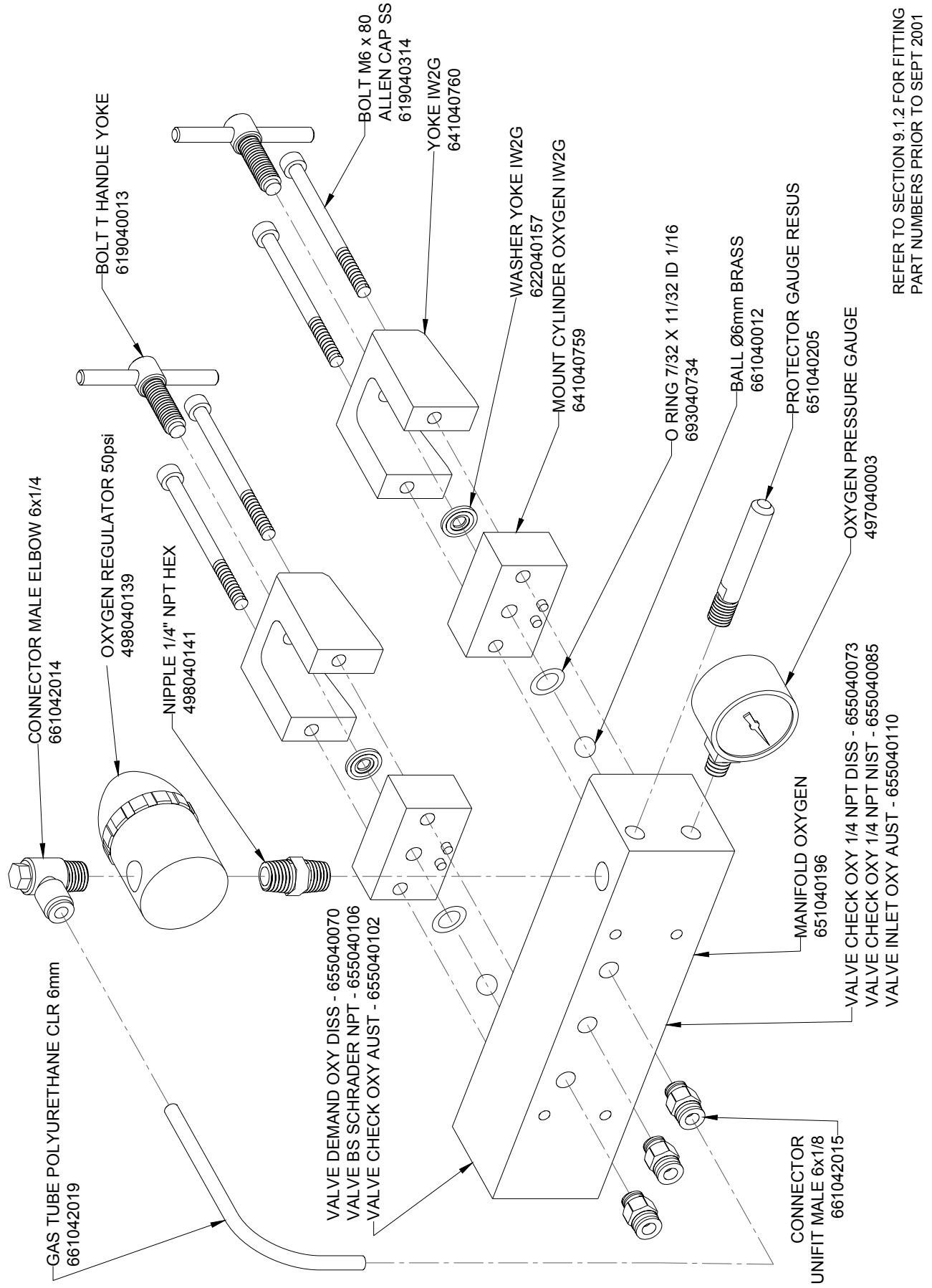
CAUTION Do not tuck the Polyurethane Gas Tube into the side of the column. This can cause the tube to be crushed by the accessory panel.

9.4.1 900IW101/103/105 Oxygen Gas Supply Module Circuit Diagram

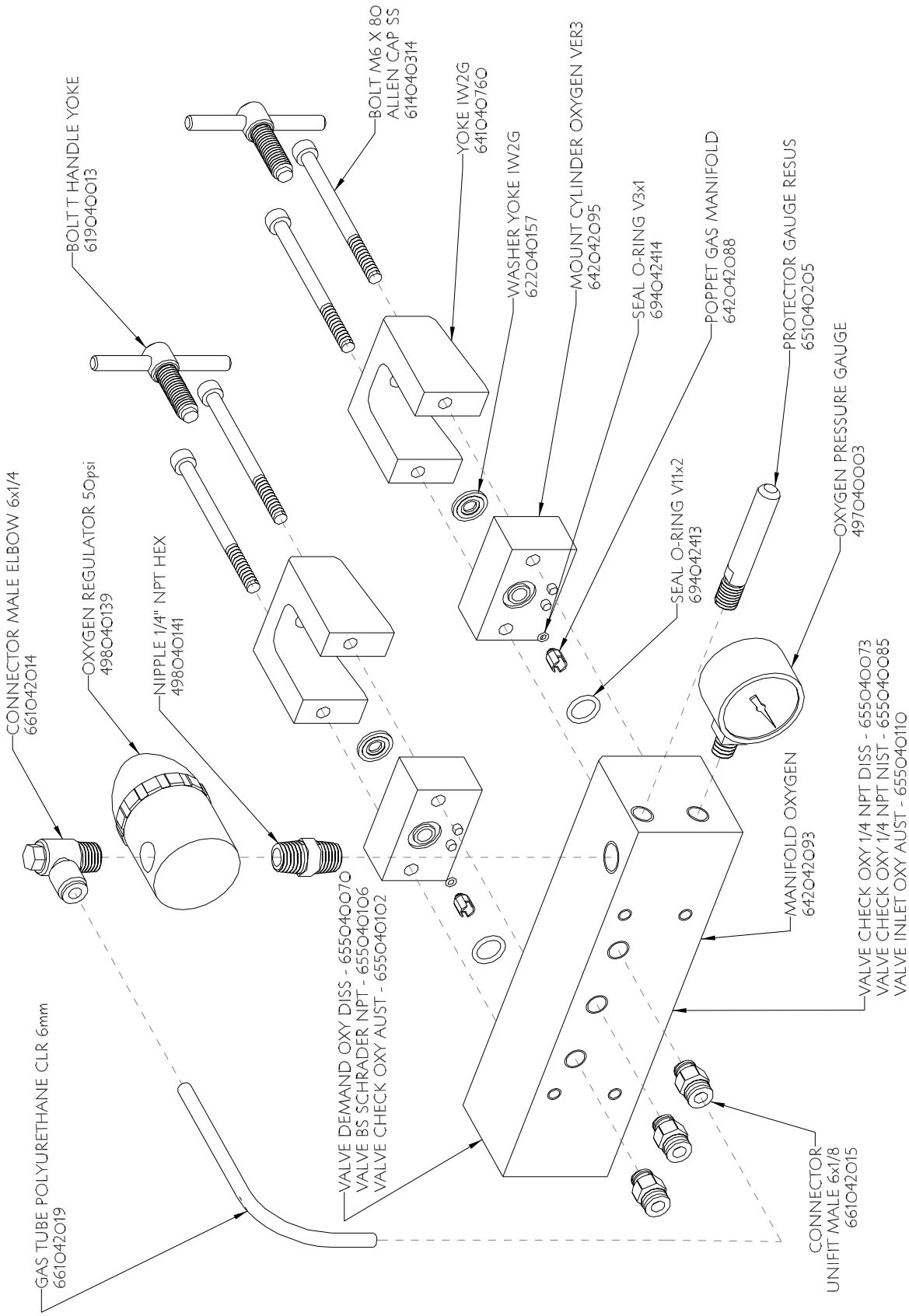
Connected to a 900IW110/112 Oxygen Flowmeter Module



9.4.2 900IW101/103/105 Oxygen Gas Supply Module Ver 1 Assembly Diagram

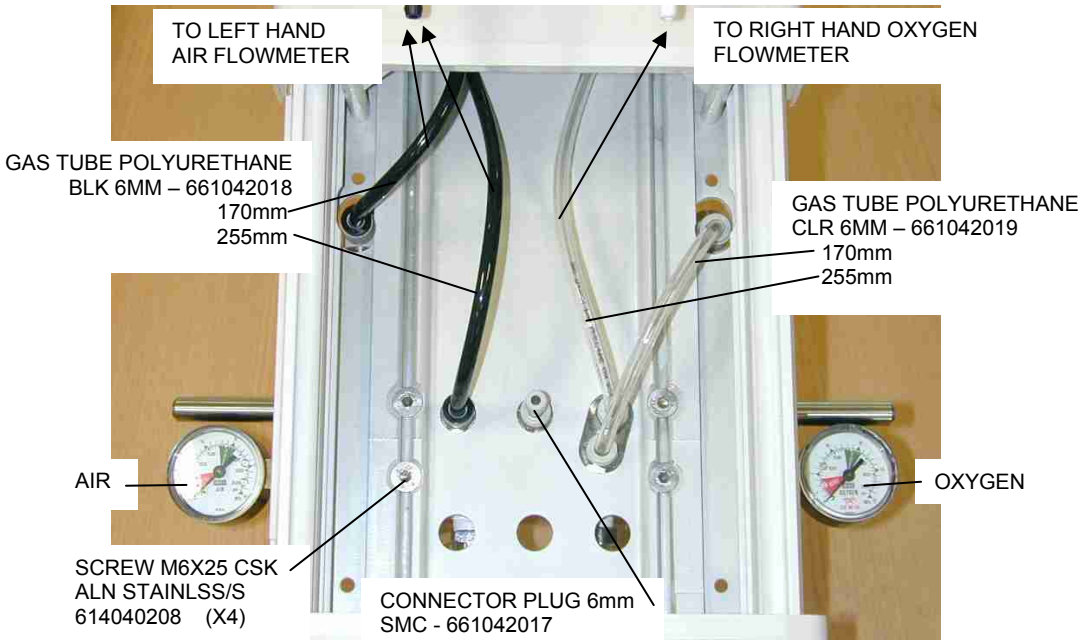


9.4.3 900IW101/103/105 Oxygen Gas Supply Module Ver 3 Assembly Diagram

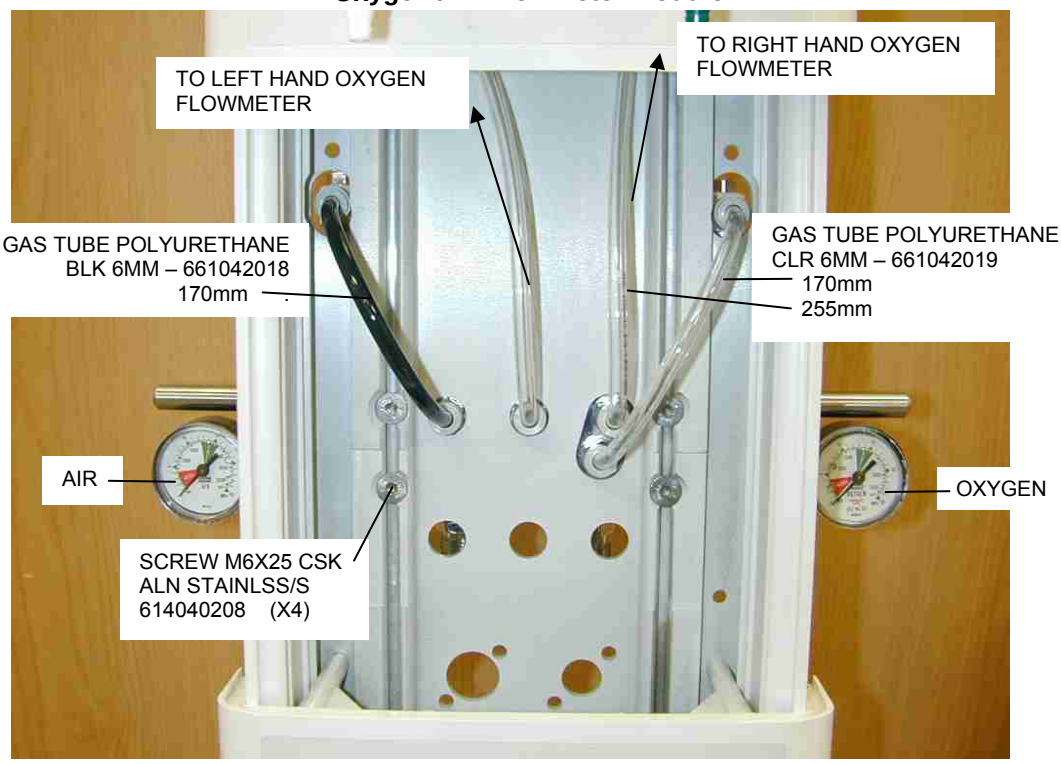


9.5 900IW102/104/106 Oxygen/Air Gas Supply Modules

- From September 2001 all the Swagelok™ parts were replaced with fittings from the SMC™ range as shown in the table in section 9.1.2.



View of internal connections between 900IW102/4/6 Oxygen/Air Gas Supply Modules and 900IW111/113 Oxygen /Air Flowmeter Module

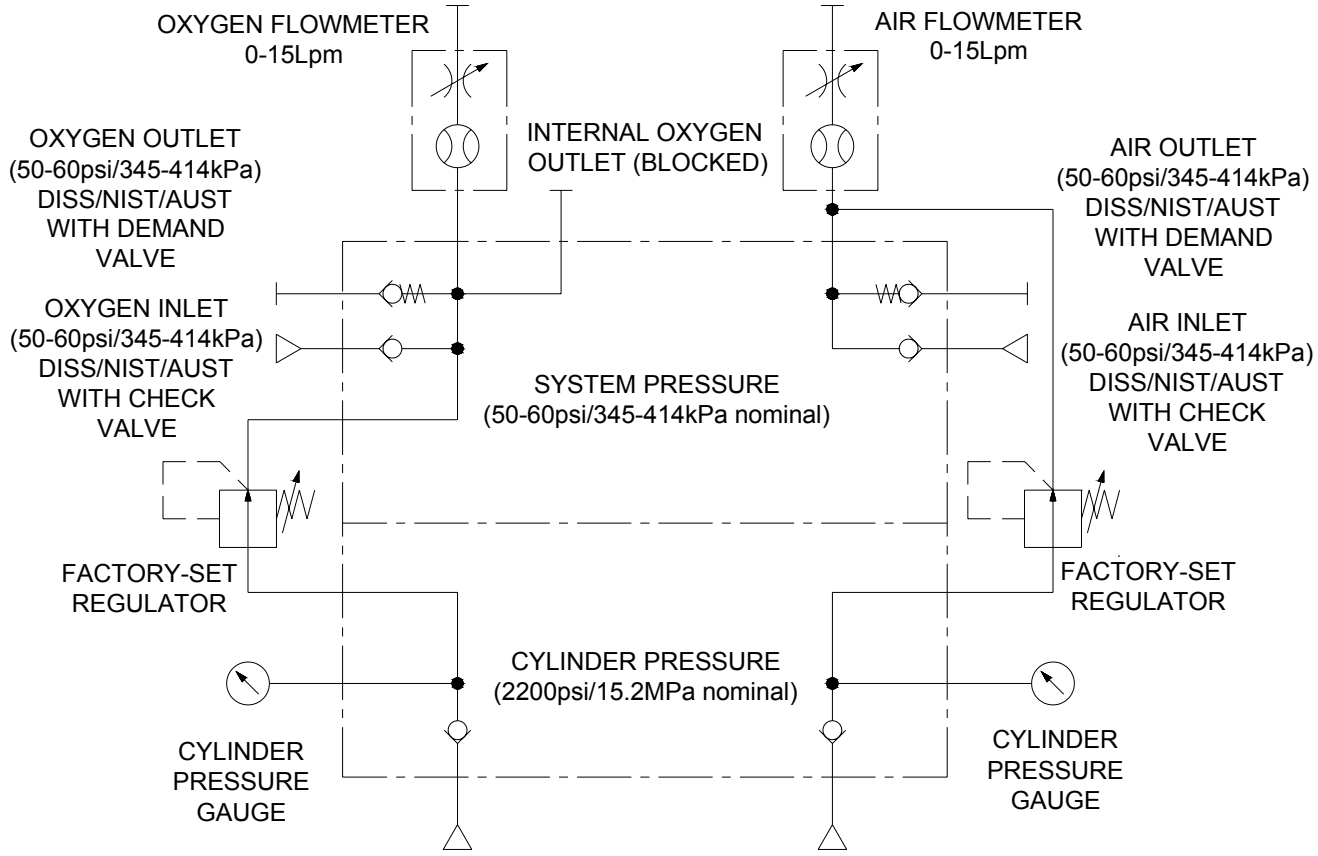


View of internal connections between 900IW102/4/6 Oxygen/Air Gas Supply Modules and 900IW110/112 Oxygen Flowmeter Module

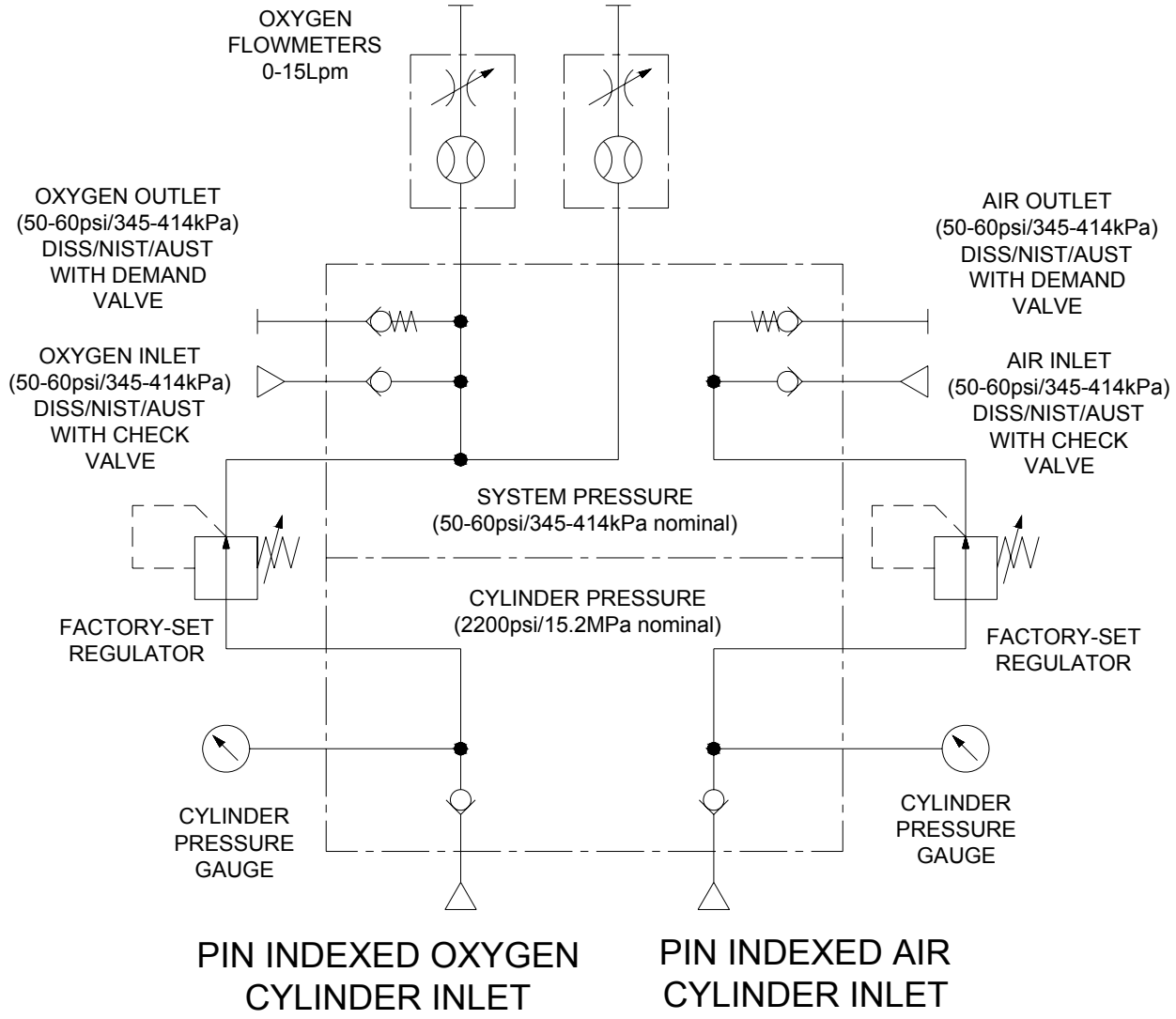
CAUTION Do not tuck the Polyurethane Gas Tube into the side of the column. This can cause the tube to be crushed by the accessory panel.

9.5.1 900IW102/104/106 Oxygen/Air Gas Supply Module Circuit Diagrams

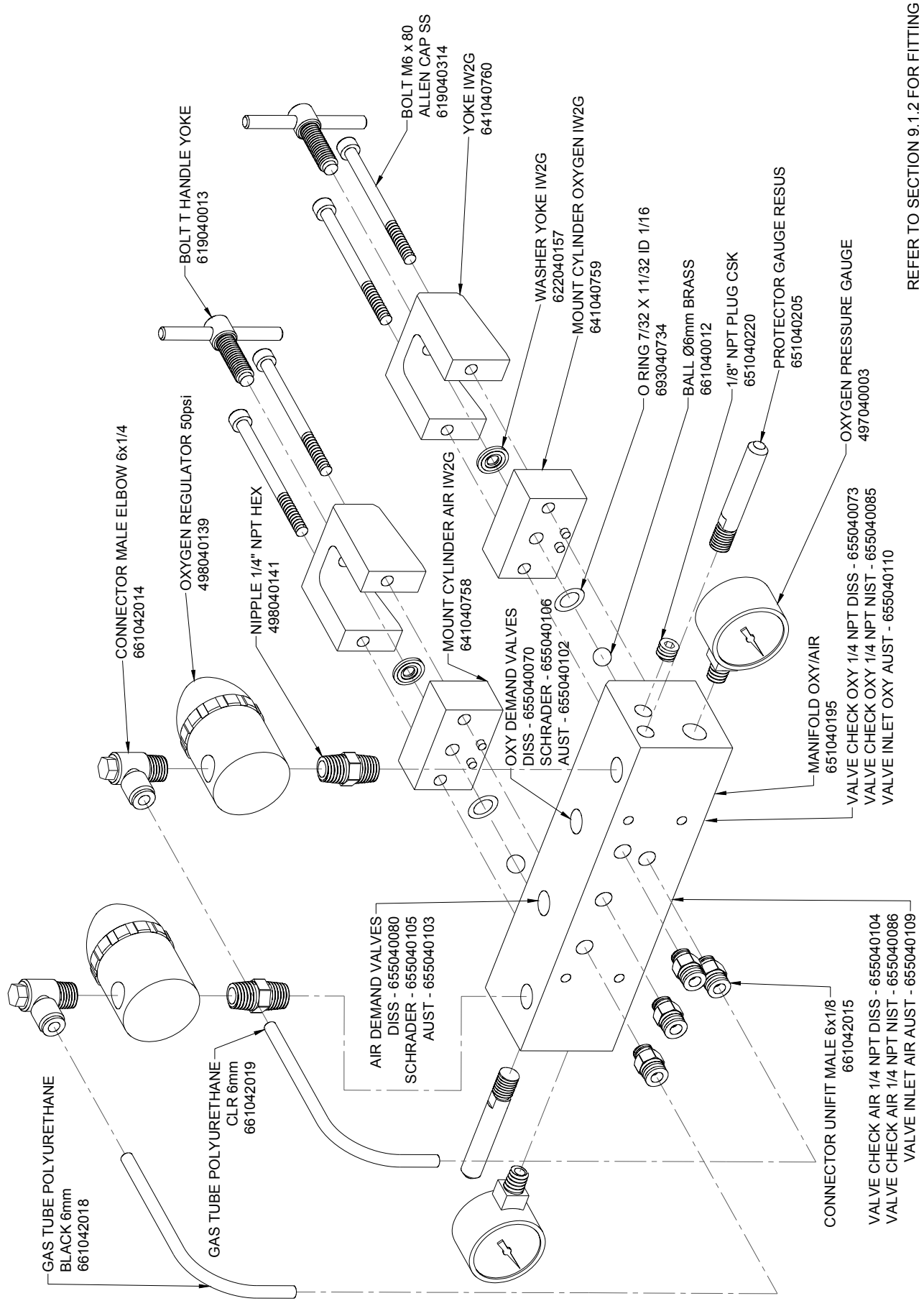
Connected to a 900IW111/113 Oxygen/Air Flowmeter Module



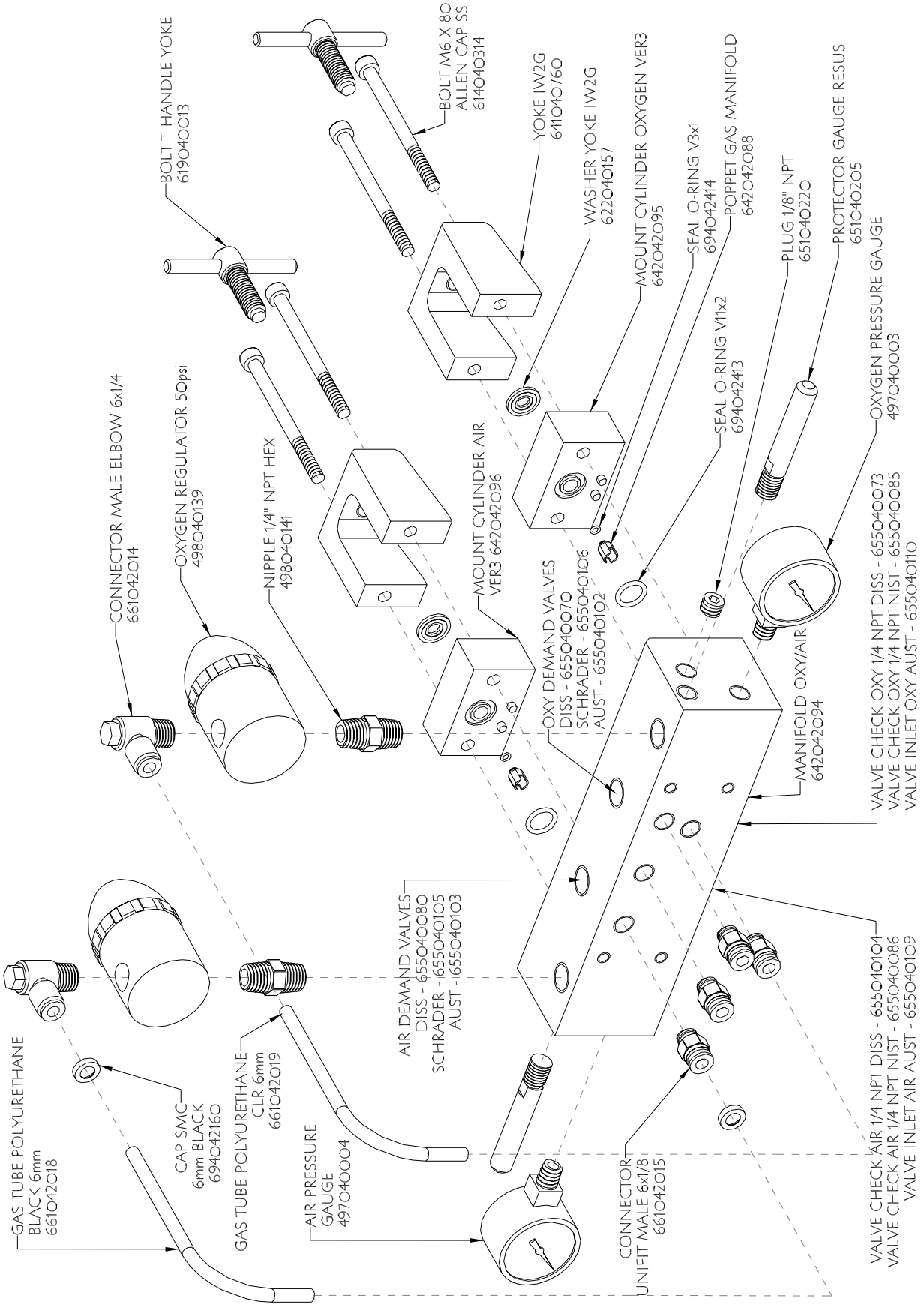
Connected to a 900IW110/112 Oxygen Flowmeter Module



9.5.3 900IW102/104/106 Oxygen Air Gas Supply Module Ver 1 Assembly Diagram



9.5.4 900IW102/104/106 Oxygen Air Gas Supply Module Ver 3 Assembly Diagram



9.6 900IW110/111/112/113 Flowmeter Modules

- The 900IW110/112 OXYGEN FLOWMETER MODULE contains two 0-15lpm flowmeters, which are connected internally to a GAS SUPPLY MODULE or GAS LOW PRESSURE MODULE. This module can be fitted to all such modules regardless of gas fitting style or gas type.
- The 900IW111/113 OXYGEN/AIR FLOWMETER MODULE contains one oxygen and one air flowmeter. This module can only be fitted to the following OXYGEN/AIR modules (900IW102, 900IW104, 900IW106, 900IW162, 900IW164, 900IW164K, 900IW166 and 900IW168). An SMC plug (661042017) blocks off the central gas outlet on the GAS SUPPLY MODULE manifold block.

From September 2001 all Swagelok™ parts were replaced with fittings from the SMC™ range as shown in the table in section 9.1.2. A replacement flowmeter module with Swagelok fittings can be manufactured by special request.

(Precision Medical Flowmeters SUPERSEEDED August 2005)

- Up until August 2005 all flowmeters were manufactured by PRECISION MEDICAL. A flowmeter repair kit is available from Precision Medical under the following part number:

  RK1120AU Chrome Flowmeter Repair Kit

- For further information relating to the flowmeters refer to the Precision Medical User Manual included with the product.

Precision Medical Contact details are below:

Precision Medical
300 Held drive
Northampton
Pennsylvania 18067
Tel: 001 610 262 6090

Amvex Flowmeters

From August 2005 the Precision Medical flowmeters were replaced with Amvex 0-15 lpm flowmeters. These flowmeters have special orifices that restrict the maximum flow through the flowmeter to just above 15 lpm.

- A flowmeter repair kit is available from Amvex under the following part number:

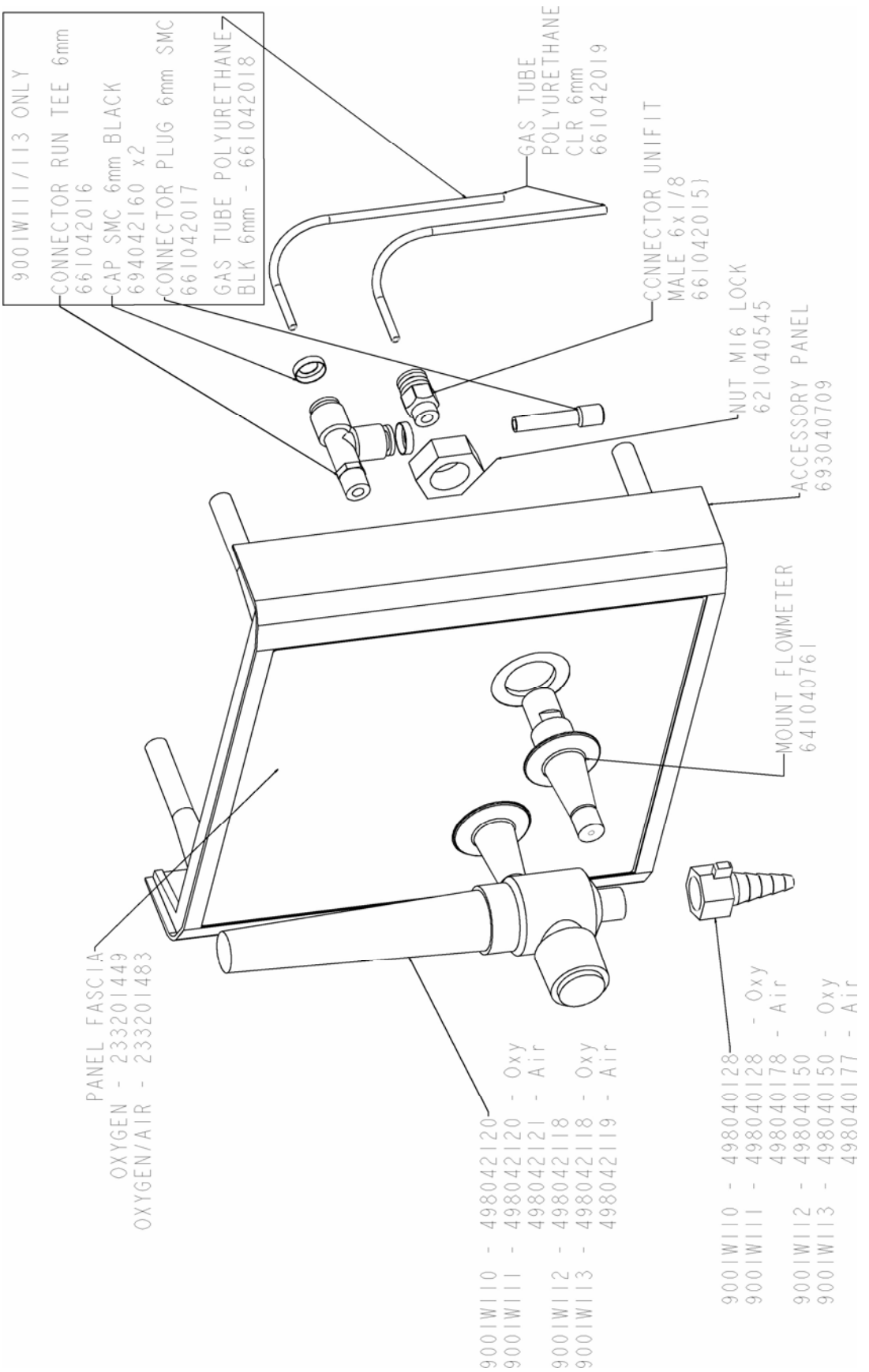
  FM-KIT Flowmeter Repair Kit

- For further information relating to these flowmeters refer to the Amvex User Manual included with the product.

Amvex Corporation contact details are below:

Amvex Corporation
Unit 21 - 121 Granton Drive
Richmond Hill, ON
Canada
Tel: 001 905 764 7736

a. 900IW11X Flowmeter Modules Assembly Diagram



9.7 900IW115/116/117/117G/118/118Y Single Flowmeters

- The following single flowmeters are available:

900IW115	OXY AUST	900IW116	AIR AUST
900IW117	OXY DISS	900IW118	AIR DISS
900IW117G	OXY DISS Green	900IW118Y	AIR DISS Yellow

(Precision Medical Flowmeters SUPERSEEDED August 2005)

- Up until August 2005 all flowmeters were manufactured by PRECISION MEDICAL. A flowmeter repair kit is available from Precision Medical under the following part number:

  RK1120AU Chrome Flowmeter Repair Kit

- For further information relating to the flowmeters refer to the Precision Medical User Manual included with the product.

  Precision Medical Contact details are below:

  Precision Medical
  300 Held drive
  Northampton
  Pennsylvania 18067
  Tel: 001 610 262 6090

Amvex Flowmeters

From August 2005 the Precision Medical flowmeters were replaced with Amvex 0-15 lpm flowmeters. These flowmeters have special orifices that restrict the maximum flow through the flowmeter to just above 15 lpm.

- A flowmeter repair kit is available from Amvex under the following part number:

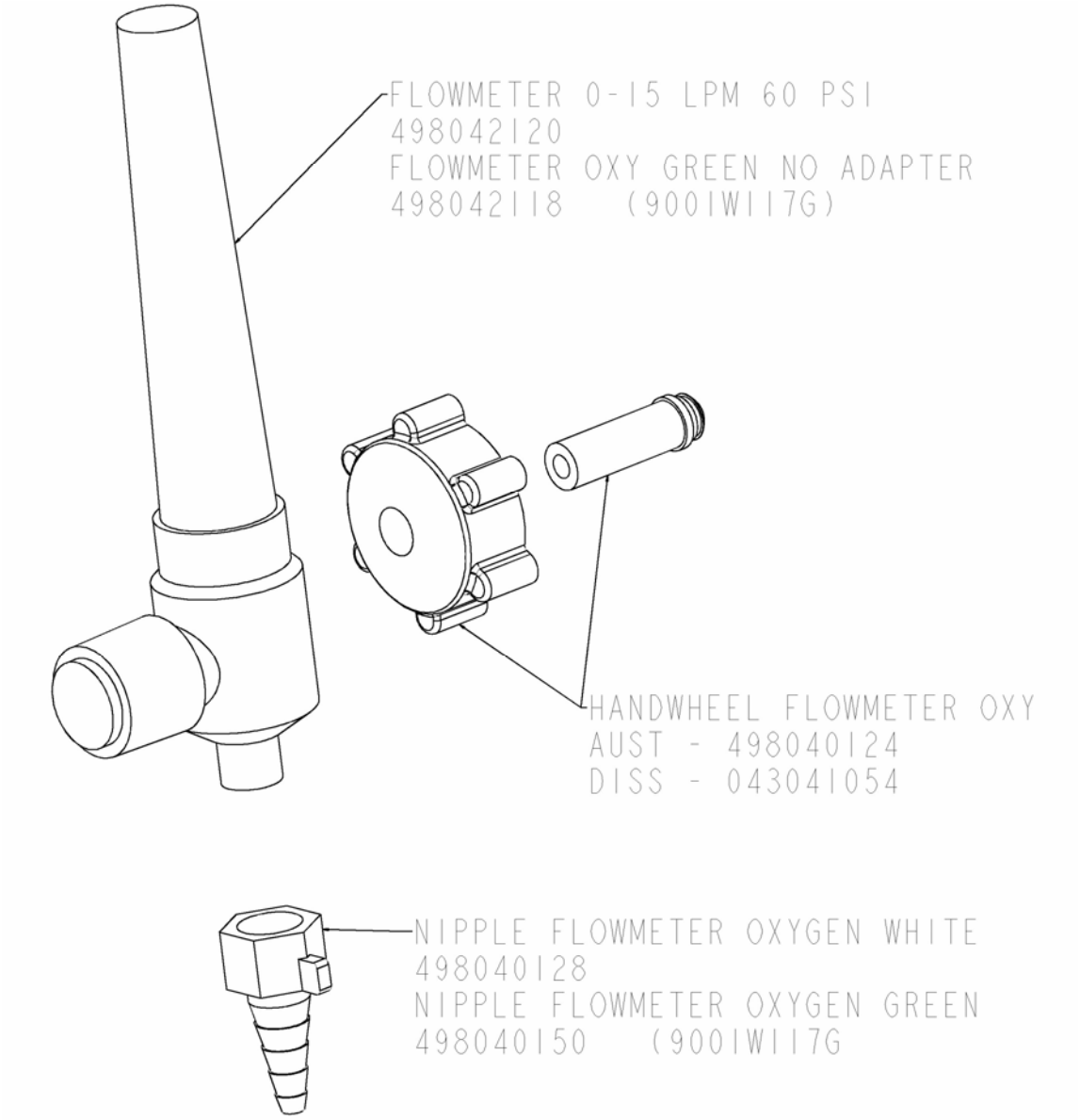
  FM-KIT Flowmeter Repair Kit

- For further information relating to these flowmeters refer to the Amvex User Manual included with the product.

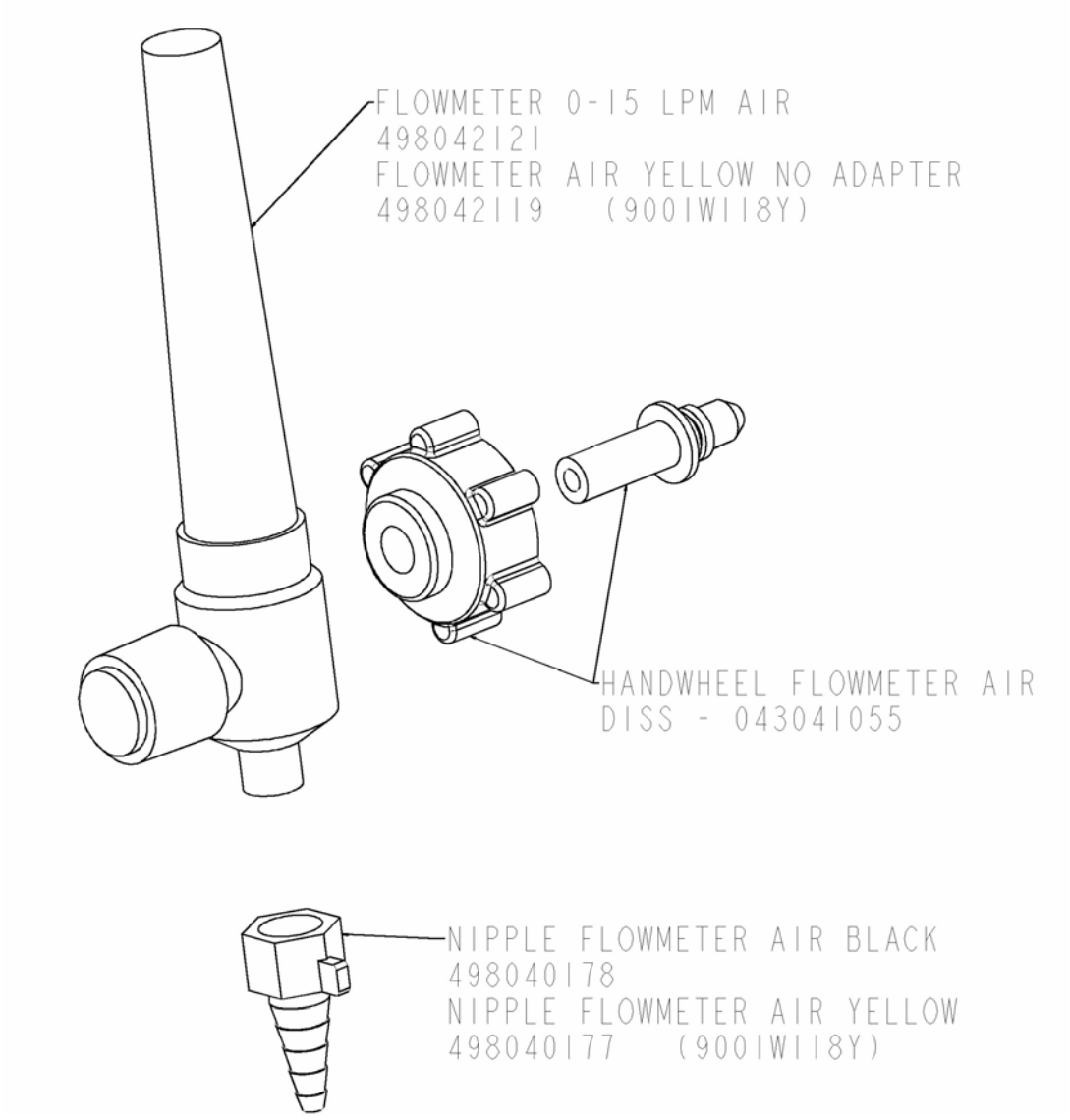
Amvex Corporation contact details are below:

Amvex Corporation
Unit 21 - 121 Granton Drive
Richmond Hill, ON
Canada
Tel: 001 905 764 7736

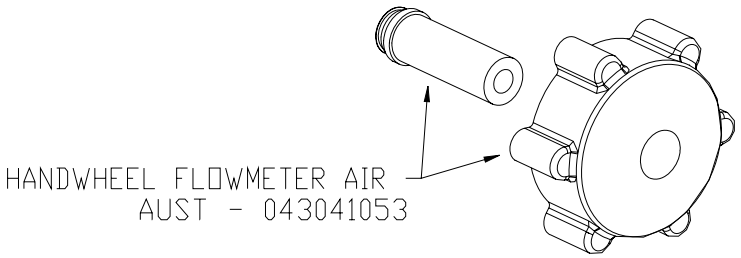
9.7.1 900IW115/117/117G Oxygen Single Flowmeter Assembly Diagram



9.7.2 900IW116/118/118Y Air Single Flowmeter Assembly Diagram



HANDWHEEL FOR 900IW116
FLOWMETER AIR AUST

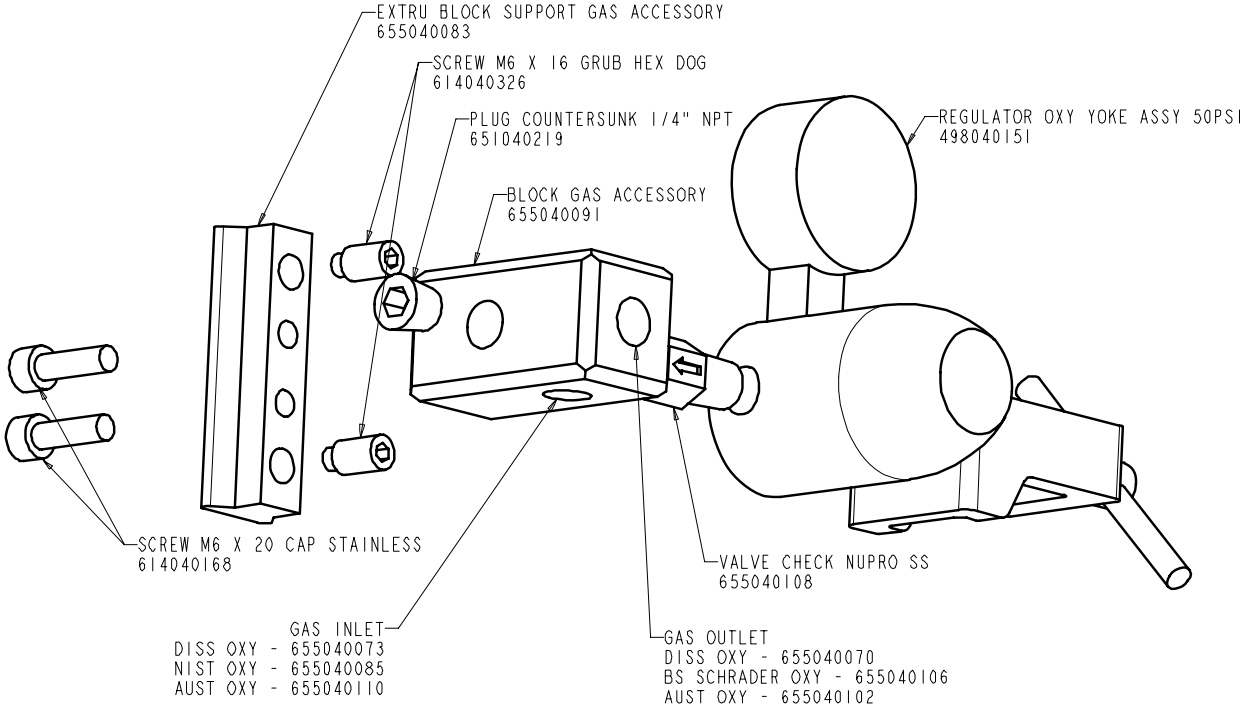


9.8 900IW14X Gas Cylinder Blocks (Discontinued from 1st March 1999)

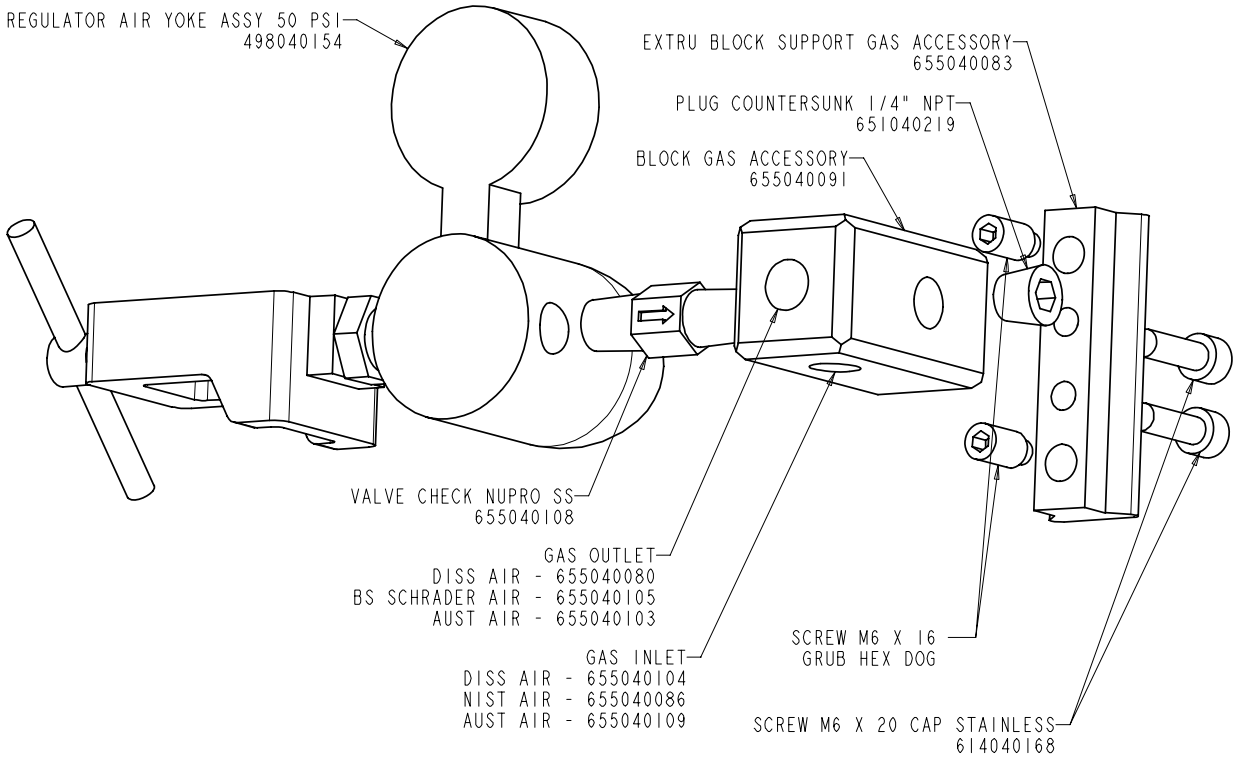
GAS CYLINDER BLOCKS provide both a single cylinder gas supply and a wall supply inlet. They can be connected to a GAS ACCESSORY BLOCK by way of a short (550MM) hose or connected to a hospital wall supply with a long (3m) hose. Suction units or single flowmeters can also be fitted to the gas outlet. The part numbers are as follows:

900IW141	OXY DISS	900IW142	AIR DISS
900IW143	OXY NIST	900IW144	AIR NIST
900IW145	OXY AUST	900IW146	AIR AUST

9.8.1 900IW141/3/5 Oxygen Gas Cylinder Block Assembly Diagram



9.8.2 900IW142/4/6 Air Gas Cylinder Block Assembly Diagram



9.9 900IW15X Gas Accessory Blocks

These are used for mounting single flowmeters (900IW115 - 900IW118), suction units and blenders. They can be connected to a GAS SUPPLY MODULE or LOW PRESSURE GAS MODULE by way of a short (550MM) hose or connected to a hospital wall supply with a long (3m) hose. There are both oxygen and air blocks for all three gas-fitting styles. The part numbers are as follows:

900IW151 OXYGEN DISS	900IW152 AIR DISS
900IW153 OXYGEN NIST	900IW154 AIR NIST
900IW153K OXYGEN UK	900IW154K AIR UK
900IW155 OXYGEN AUST	900IW156 AIR AUST

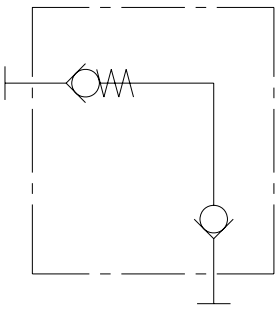
The 900IW153K and 900IW154K blocks are configured specifically for Fisher & Paykel Healthcare (UK) to enable an OxyLitre suction module to be fitted.

- From April 2002 the 183041888 label was replaced with the 183042051 Oxygen label on 900IW151/153 units and the 183041889 label was replaced with the 185042051 Air label on 900IW152/154/156 units. These new labels indicate the gas inlets and outlets.
- From March 2002 the 900IW155 changed to two inlets. This also necessitated changing to the 642042004 Gas Accessory Block UK and having a specific label to indicate the inlets and outlets (183042052). Two of these labels are required.
- From May 1999 the Block Gas Accessory (655040091) was changed and the cross-hole removed. Hence the 900IW151 changed back to only having one gas outlet.

9.9.1 900IW15X Gas Accessory Block Circuit Diagrams

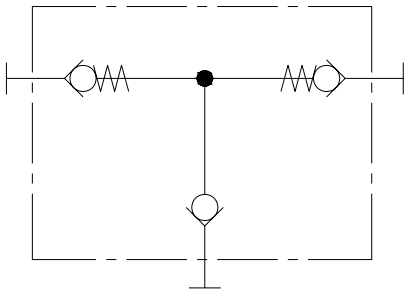
For 900IW151/153/155 Oxygen Gas Accessory Blocks

OXYGEN OUTLET
(50-60psi/345-414kPa)
DISS/NIST/AUST
WITH DEMAND
VALVE

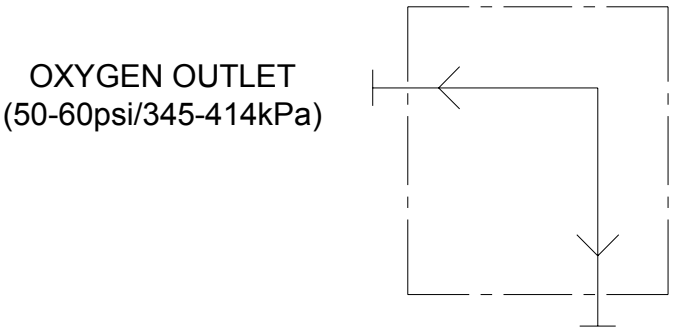


OXYGEN INLET
(50-60psi/345-414kPa)
DISS/NIST/AUST
WITH CHECK
VALVE

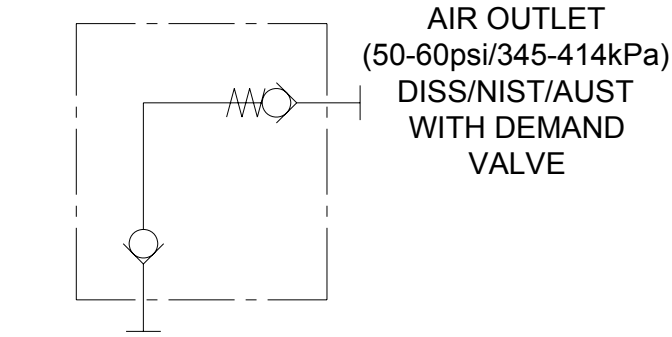
For 900IW155 Oxygen Gas Accessory Block AUST – after March 2002



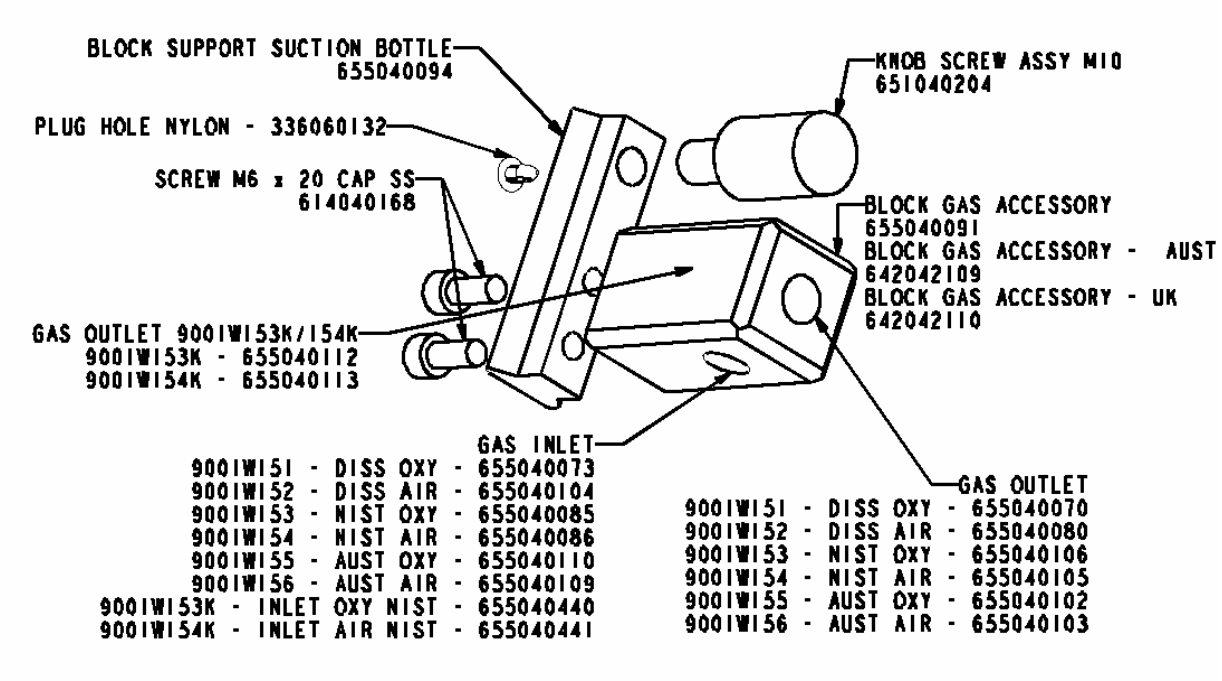
For 900IW153K Oxygen Gas Accessory Block UK



For 900IW152/154/156 Air Gas Accessory Blocks



9.9.2 900IW15X Gas Accessory Blocks Assembly Diagram



As of September 2005 the blocks used for 900IW153K and 900IW155 have changed.

- 900IW153K now uses block 642042110 (changed from 642042004)
- 900IW155 now uses block 642042109

9.10 900IW16X Low Pressure Gas Modules

9.10.1 900IW16X Low Pressure Gas Modules Information

These are used for mounting single flowmeters, suction units and blenders. They can be connected internally to an OXYGEN FLOWMETER MODULE or OXYGEN/AIR FLOWMETER MODULE and connected to a hospital wall supply with a long (3m) hose or to cylinders via a short hose and with the use of a Dual Cylinder Rack (900IW310). If no Flowmeter Module is ordered the SMC™ fittings can be sealed off with the supplied plugs (661042017). The part numbers are as follows:

900IW161	OXYGEN DISS	900IW162	OXY/AIR DISS
900IW163	OXYGEN NIST	900IW164	OXY/AIR NIST
900IW165	OXYGEN AUST	900IW166	OXY/AIR AUST
	900IW168	OXY/AIR FRA	

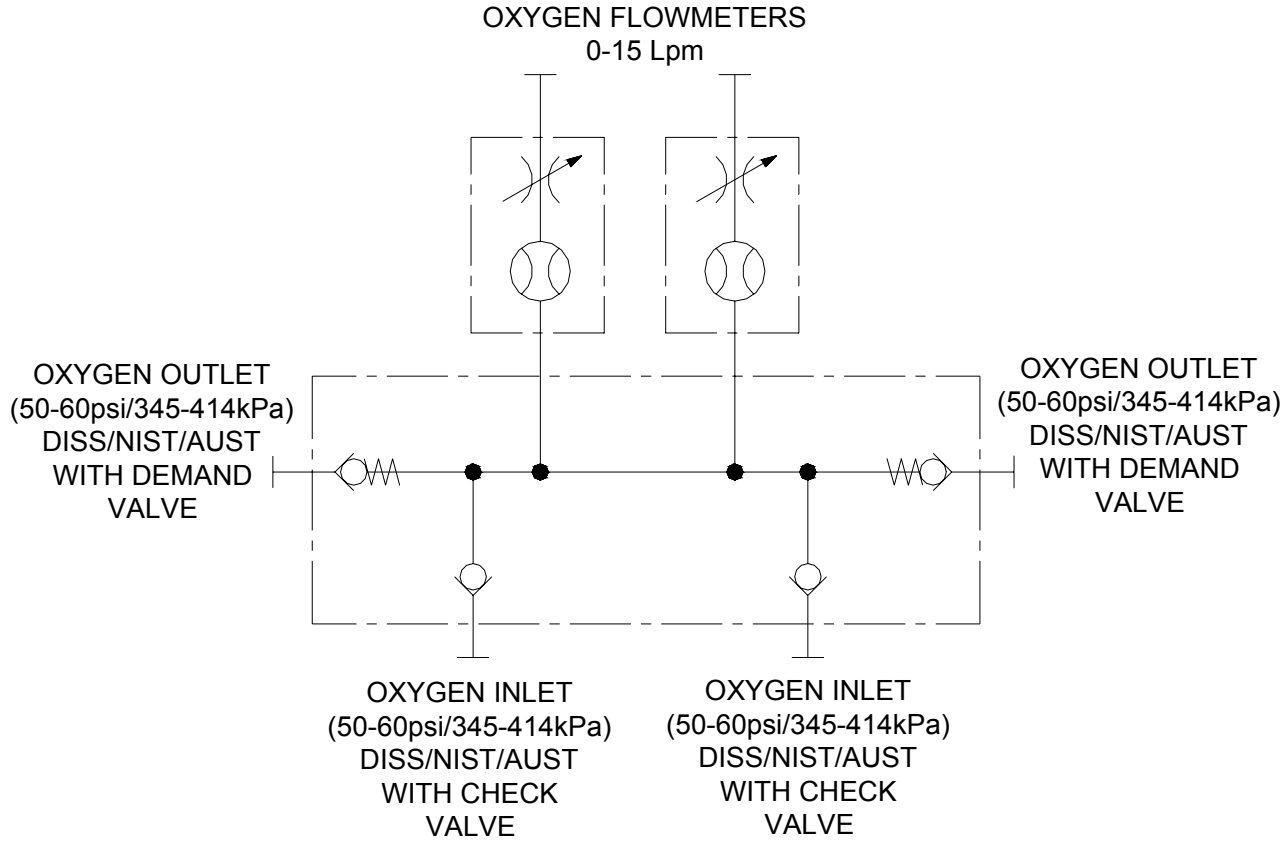
- The low-pressure gas modules can be installed in two positions depending on the gas cylinder height of each country. The higher position in the column (directly behind the highest accessory panel) is provided for cylinders greater than 600mm in height (excluding the valve) and is particularly suited to the US market.
- From September 2001 all the Swagelok™ parts were replaced with fittings from the SMC™ range as shown in the table in section 9.1.2.
- From April 2002 all Low Pressure gas modules had new labels fitted which indicate the inlets and outlets:

  For 900IW161/3/5 units, label 183042048 replaces 183041888.

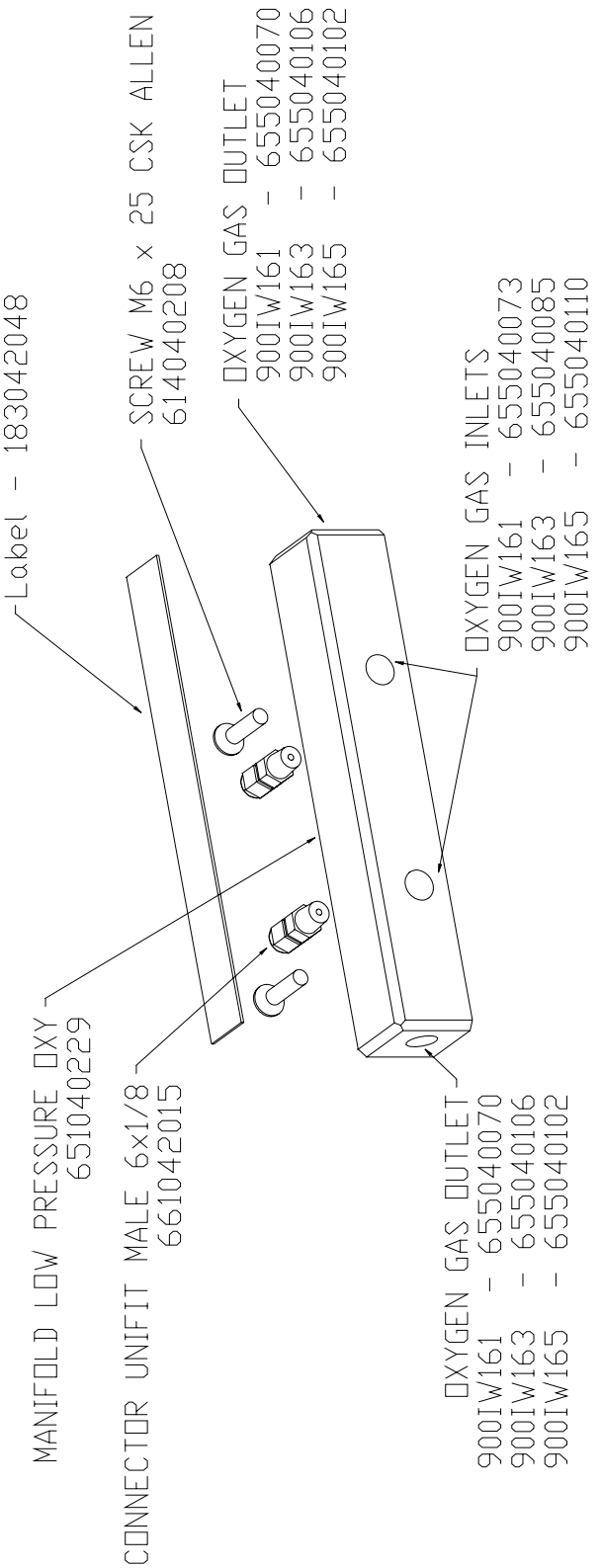
  For 900IW162/4/6/8 units label 183042049 replaces labels 183041888 and 183041889.

9.10.2 900IW161/3/5 Oxygen Low Pressure Gas Modules Circuit Diagram

Connected to a 900IW110/112 Oxygen Flowmeter Module

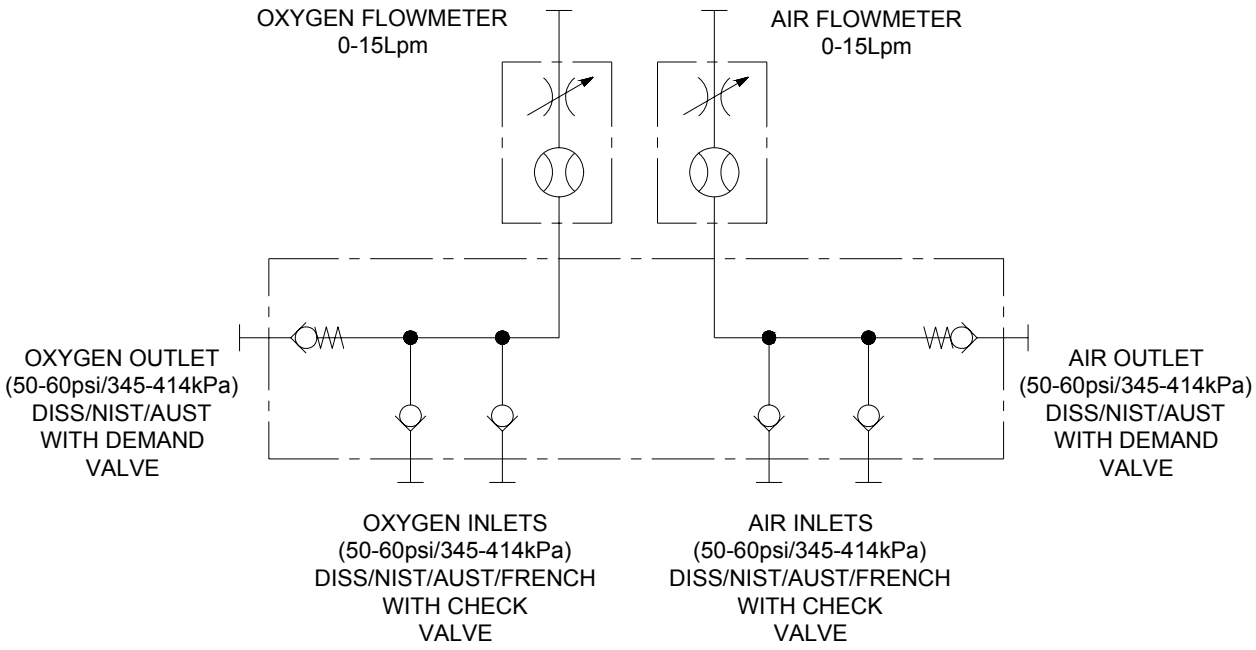


9.10.3 900IW161/3/5 Oxygen Low Pressure Gas Modules Assembly Diagram

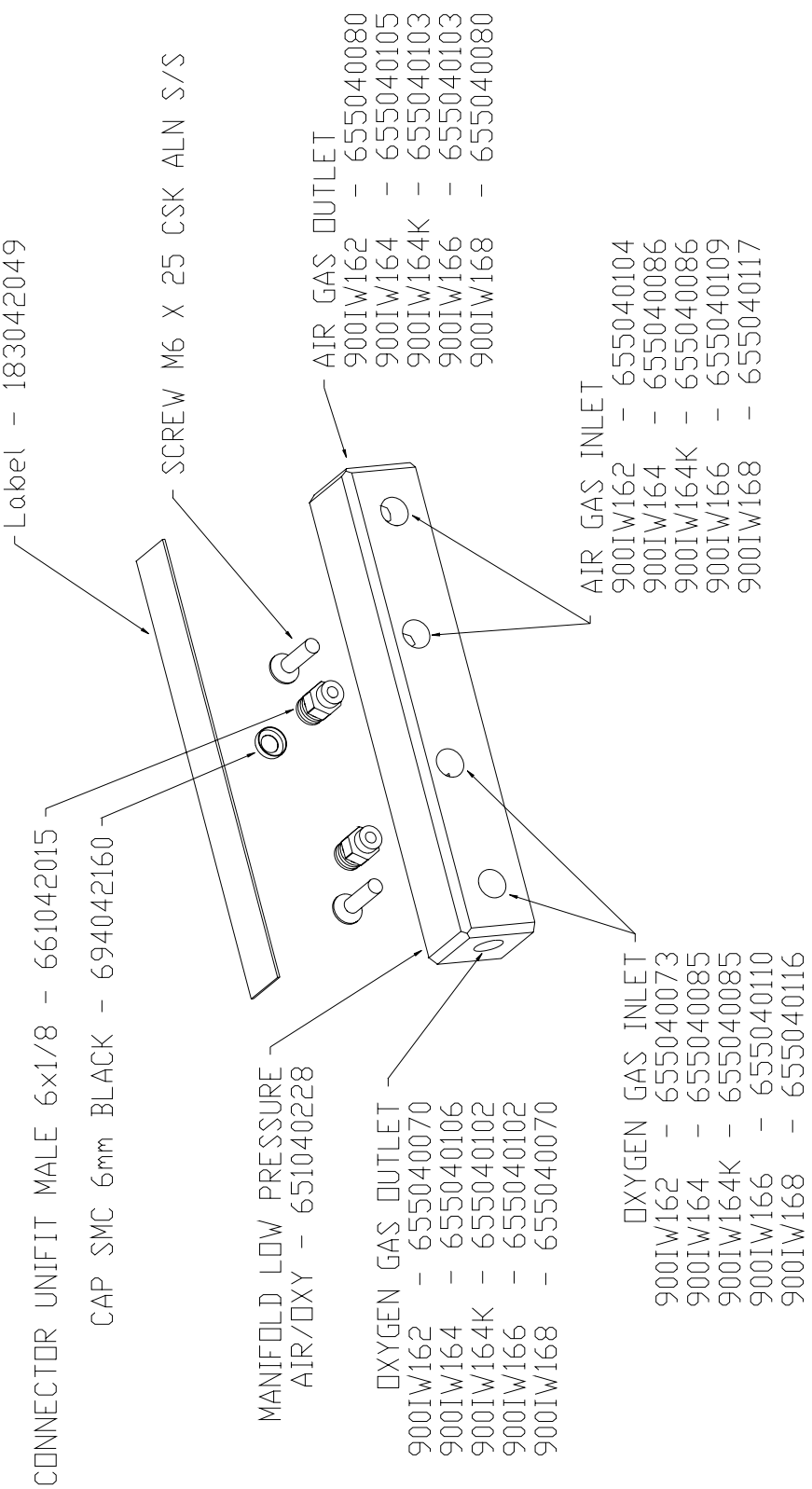


9.10.4 900IW162/4/6/8 Oxygen/Air Low Pressure Gas Modules Circuit Diagram

Connected to a 900IW111/113 Oxygen/Air Flowmeter Module



9.10.5 900IW162/4/6/8 Oxygen/Air Low Pressure Gas Modules Assembly Diagram



9.11 900IW171 Oxygen Regulator

9.11.1 900IW171 Oxygen Regulator Service Information

This is used for supplying a GAS ACCESSORY BLOCK or a GAS LOW PRESSURE MODULE. It is used in conjunction with a short hose (550mm), medical oxygen cylinder and Cylinder Rack (900IW310/311).

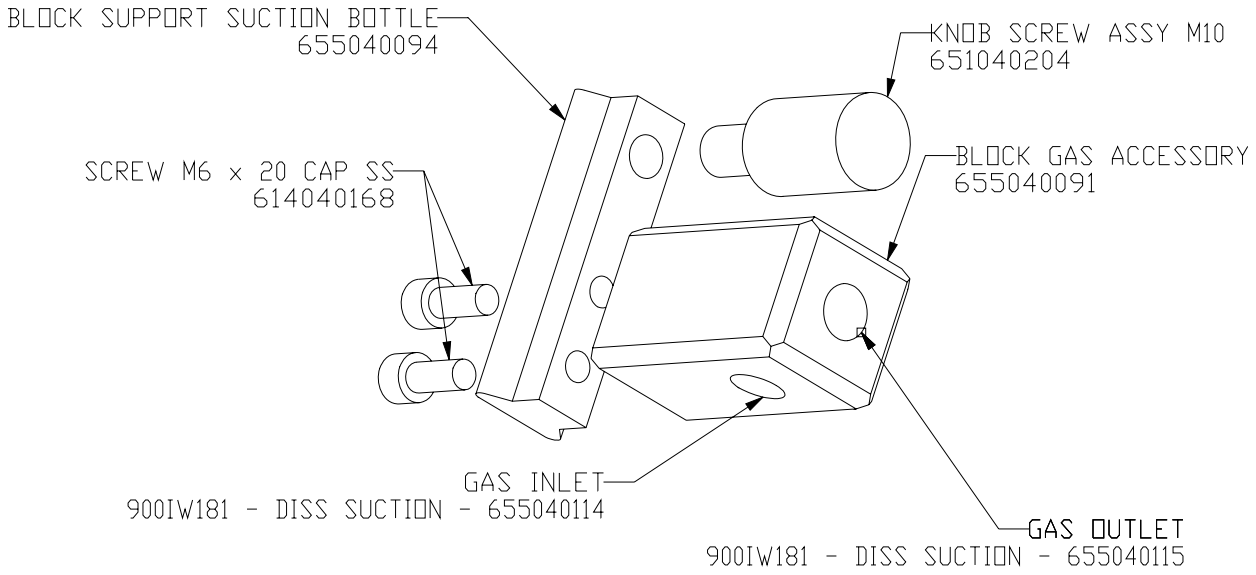
Currently only the 900IW171 OXY DISS is available.

9.11.2 900IW171 Oxygen Regulator Assembly

9.12 900IW181 Suction Block DISS

Specifically for the US market the 900IW181 DISS allows suction units to be moved from the wall suction outlets and mounted onto the side of a CosyCot™ Infant Radiant Warmer.

9.12.1 900IW181 Suction Block Assembly Diagram

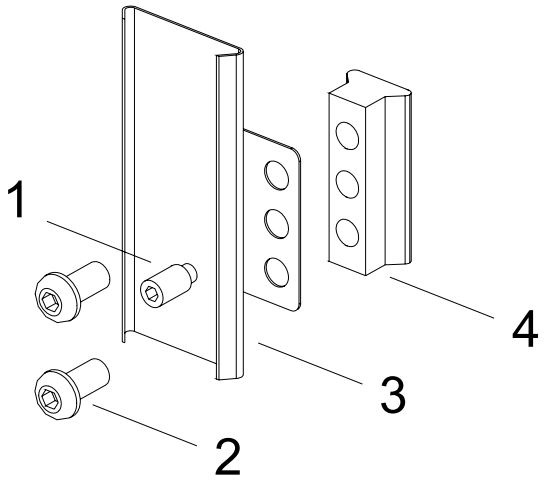


9.13 Associated Gas Accessories

9.13.1 900IW309 Suction Canister Mounting Block

The 900IW309 Suction Canister Mounting block is designed to hold standard Abbot and Baxter suction canisters.

900IW309 SUCTION CANNISTER MOUNTING BLOCK ASSEMBLY DIAGRAM



900IW309 SUCTION CANNISTER MOUNTING BLOCK ASSEMBLY PARTS LIST

Item	*Part Number*	*Description*
1	614040326	Screw M8 x 16 Grub Hex Dog Pnt
2	614040325	Screw M8 x 16 Allen Button Head SS
3	648040151	Bracket Assy Suction Canister Mtg
4	655040088	Block Support 50mm IW2G
5	693041419	Cap Grub Screw

9.13.2 900IW310 Dual Cylinder Rack

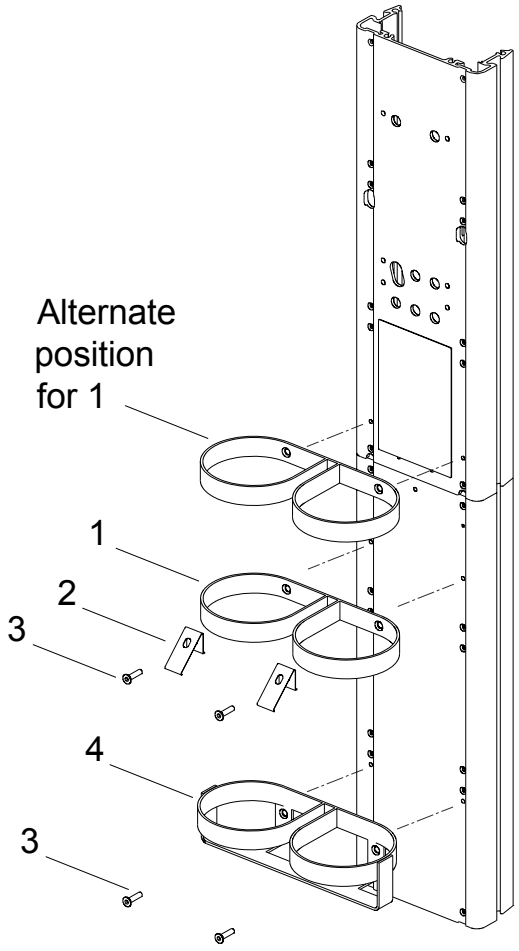
WARNING
CARE SHOULD BE TAKEN TO ENSURE THAT THE MAXIMUM TOTAL ACCESSORY WEIGHT ON THE WARMER DOES NOT EXCEED THE MAXIMUM SPECIFICATION, REFER TO SECTION 2.8.2.

The 900IW310 Dual Cylinder Rack is designed to hold two gas cylinders up to 117mm (4.6") diameter. For cylinders taller than 600mm (24"), excluding the valve, the upper bracket (1) can be positioned higher on the column to provide additional support.

NOTE: This normally occurs in conjunction with positioning a 900IW16X low-pressure module on the upper mounting holes and is particularly suited to cylinders in the US market.

The gas bottle retainer spring can be optionally fitted to give additional support to narrow gas bottles.

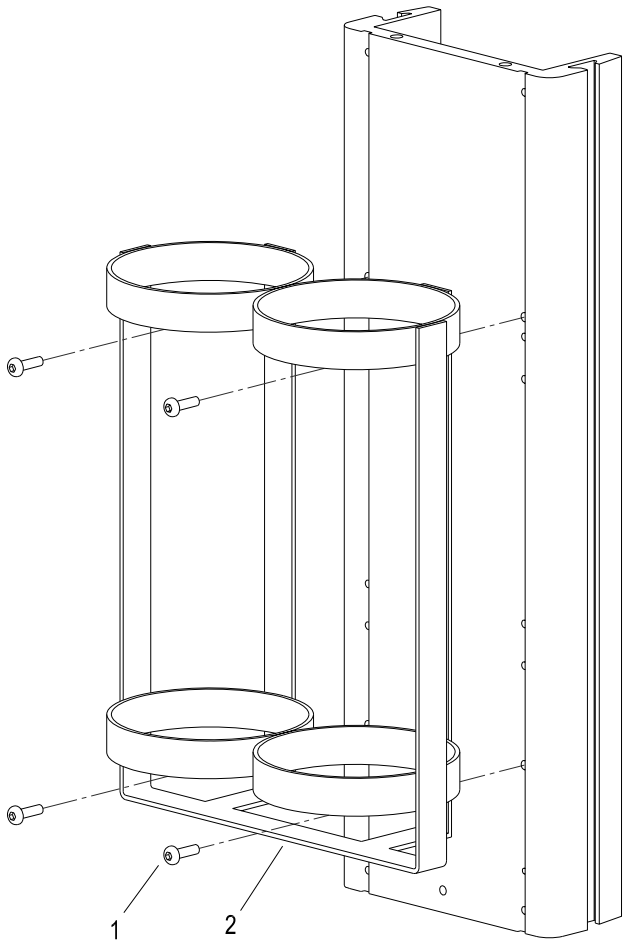
900IW310 DUAL CYLINDER RACK VERSION 2 ASSEMBLY DIAGRAM



900IW310 DUAL CYLINDER RACK VERSION 2 ASSEMBLY PARTS LIST

Item	*Part Number*	*Description*
1	648040159	Bracket Bottle Upper IW2G
2	661042020	Spring Gas Bottle Retainer
3	614040151	Screw M6 x 20 Csk Pozi ZPS
4	648040158	Bracket Bottle Lower IW2G

900IW310 DUAL CYLINDER RACK VERSION 1 ASSEMBLY DIAGRAM (Discontinued in July 2001)



900IW310 DUAL CYLINDER RACK VERSION 1 ASSEMBLY PARTS LIST

Item	*Part Number*	*Description*
1	614040242	Screw M6x20 Pan/Pozi
2	648040159	Bracket Dual Bottle
3	188042002	Tape Foam

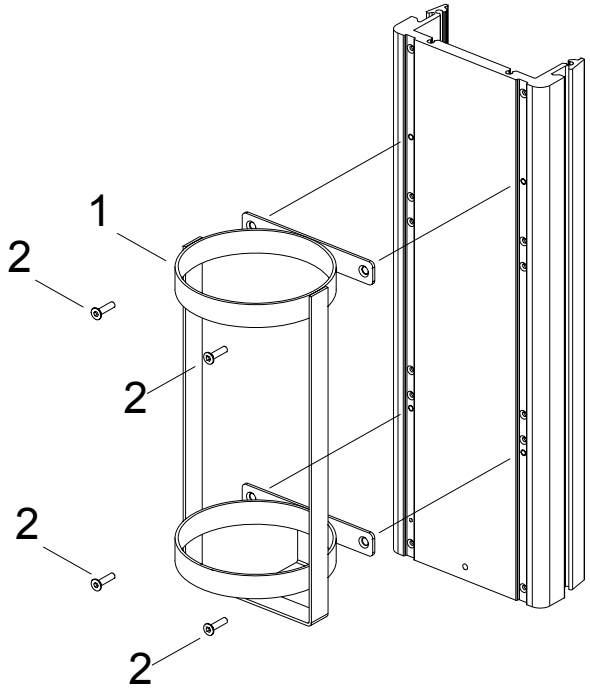
9.13.3 900IW311 Single Cylinder Rack

WARNING
CARE SHOULD BE TAKEN TO ENSURE THAT THE MAXIMUM TOTAL ACCESSORY WEIGHT ON THE WARMER DOES NOT EXCEED THE MAXIMUM SPECIFICATION, REFER TO SECTION 2.8.2.

.

The 900IW311 Single Cylinder Rack is designed to hold one large gas cylinder (Air Liquide B5 or similar) up to 140mm (5.5”) diameter and 670mm (26.4”) tall.

900IW311 SINGLE CYLINDER RACK ASSEMBLY DIAGRAM



900IW311 SINGLE CYLINDER RACK ASSEMBLY PARTS LIST

Item	*Part Number*	*Description*
1	642042007	Bracket Single Cylinder Large
2	614040208	Screw M6 x 25 CSK Allen SS
3	188042002	Foam Tape

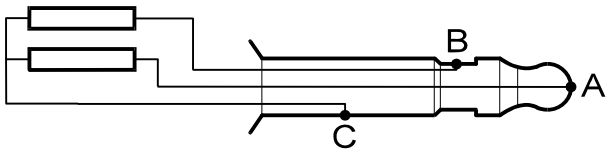
PART 10: General Accessories

10.1 900IW001 DuoSense™ Skin Sensor

The DuoSense™ Skin Sensor has two thermistor beads that are continually monitored for bead mismatches, bead shorting and open circuit. Only one of the beads is used to display temperature and the other is used for a comparison. The wiring on the probe socket determines which bead is used for the display temperature (see section 10.1.6 for wiring connections).

10.1.1 Servicing the DuoSense™ Skin Sensor

An IW900 series infant warmer automatically detects any skin sensor faults due to either thermistor deviation or electrical contact defects (by comparison of the twin thermistor bead resistances). For additional verification of the DuoSense™ operation the following check can be performed every six months.



10.1.2 DuoSense™ Skin Sensor Plug Construction

DuoSense™ skin sensors can be checked with a digital Ohmmeter. A high accuracy 4-wire Ohmmeter is recommended to eliminate measurement error due to contact resistance.

1. Measure R_{AB} the resistance from A to B
2. Measure R_{BC} the resistance from B to C
3. Measure R_{AC} the resistance from A to C

The measured resistances should then be $R_{AB} / 2 = R_{BC} = R_{AC}$ (tolerance < 2%).

Resistance vs. Temperature Curve

Selected points from the Resistance v Temperature curve for the DuoSense™ Skin Sensor are listed below:

Resistance (Ω)	*Temperature (°C)*
2814	20.0
2252	25.0
1814	30.0
1500	34.5
1471	35.0
1370	36.7
1199	40.0

10.1.3 Using 043042566 Check Probe to Check Temperature Measurement.

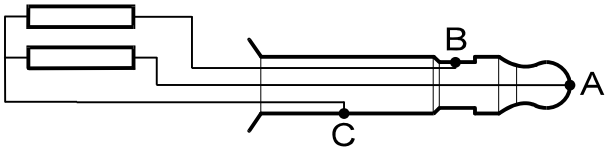
⚠ ***WARNING*** **The Infant Warmer Check Probe should only be used by qualified Bio-Medical engineers. Incorrect use could result in patient injury**.

1. Unplug the currently inserted temperature sensor (if any).
2. Plug the check probe into the temperature sensor socket. Observe the temperature display of the infant warmer, the display should read 36.7ºC ±0.1ºC.
3. If the infant warmer indicates a temperature outside the above range, perform the Infant Warmer Check Probe Servicing as described in section 10.1.4. If the infant warmer was manufactured prior to March 2000, refer section 10.1.6.
4. If the Check Probe is within the acceptable resistance range and the displayed temperature is outside 36.7ºC ±0.1ºC then the Infant Warmer fails the temperature calibration. Please contact your Fisher & Paykel Healthcare Dealer.

NOTE: If the check probe is not removed within 40 seconds, the sensor disconnect alarm will sound. The check probe must be removed before patient use.

10.1.4 Servicing 043042566 Check Probe

If it is suspected that the Check Probe is defective, the following test may be performed with a digital Ohmmeter. A high accuracy 4-wire Ohmmeter is recommended to eliminate measurement error due to contact resistance.



10.1.5 Infant Warmer Check Probe Plug Wiring

1. Measure R_{AB} the resistance from A to B
2. Measure R_{BC} the resistance from B to C
3. Measure R_{AC} the resistance from A to C

The measured resistances should be:

Connection	*Minimum Resistance (Ω)*	*Maximum Resistance (Ω)*
R_{AB}	1900	1960
R_{BC}	1369	1372
R_{AC}	530	590

10.1.6 Temperature Sensor Socket Wiring

The DuoSense™ Skin Sensor has two thermistor beads that are continually monitored for bead mismatches, bead shorting and open circuit. The wiring in the socket is:

From March 2000

Bead 1 (the end contact 'A' in 10.1.2) is the displayed temperature and bead 2 (the middle contact 'B' in 10.1.2) is used to check for mismatching temperatures. The probe socket with this wiring has two extra 10μF 25V electrolytic capacitors for additional EMC protection.

Prior to March 2000

Bead 1 (the end contact 'A' in 10.1.2) is used to check for mismatching temperatures and bead 2 (the middle contact 'B' in 10.1.2) is the displayed temperature.

NOTE: The Infant Warmer Check Probe and Single Use Temperature Sensors may not function correctly on Infant Warmer models prior to March 2000. If this is found to be the case, see section 10.1.7 for replacement loom installation.

NOTE: The bead mismatch alarm (shown as the Sensor Disconnect alarm) is only operational if the displayed temperature bead is between 27°C and 39°C. Outside of this range the Check baby and High Skin Temperature alarms override the bead mismatch alarm.

10.1.7 Sensor Loom Upgrade

To upgrade the temperature sensor wiring loom (refer diagram 6.2.2):

1. Unplug the power cable from the wall supply outlet. Turn off the UPS if installed.
2. Remove the four screws that secure the front control panel to the column. (part 9)
3. Pull the front panel away from the column until the printed circuit boards are revealed.
4. Remove probe socket cap (part 19)
5. Remove sensor loom connector (part 15) from control PCB (part 14).
6. Remove probe socket (part 16) by undoing front panel nut.
7. Replace with Probe Socket/Loom Assembly (item code 043042611).
8. Place probe socket into front panel (part 17) and tighten front panel nut.
9. Attach loom connector (part 15) to control PCB.
10. Replace probe socket cap (part 19).
11. Replace the front panel checking that it does not interfere with any wiring harnesses, in particular ribbon cable (part 7).
12. Replace the four screws (part 9).

10.2 900IW204/205 X-Ray Tray Assembly (IW93x, IW95x, IW960 & IW970)

The 900IW204/205 X-Ray Tray accessory also includes the following labels for attachment to the bassinet side panels:

183041869	Sticker X-Ray Tray Side	(adheres to the left and right side panels)
183041870	Sticker X-Ray Tray End	(adheres to the front and rear side panels)

NOTE: Replacement side panels also have a complete set of these labels to enable the user to attach whichever label is appropriate in the field.

10.2.1 900IW204/205 X-Ray Tray Assembly Change History

From Dec 2003 – 900IW205

The introduction of version 3.1 bassinet (refer to section 7.3) provided an opportunity to manufacture an upgraded version x-ray tray. This introduction of the 900IW205 x-ray tray made the 900IW204 obsolete. The 900IW205 can be fitted to any version bassinet in the field.

From August 2002 – 900IW204

The introduction of version three of the bassinet (refer to section 7.4) made all the 655040089 Support blocks (3) redundant. At the same time the bracket latch support (4) was replaced by two new latch support brackets (642042021 and 642042020) for the standard and long bassinets respectively. The standard bassinet x-ray latch bracket (1) has the x-ray tray catch (8) attached to the shorter length of the bracket whilst the long bassinet x-ray latch bracket (2) has the latch attached to the longer side.

From March 2002 – 900IW204

A new drawer runner assembly (13) was introduced which did not have the rear hook for connection with the x-ray tray (15). As a consequence an additional screw hole was added to the tray (15) and two screws (14) are now required on each side of the x-ray tray.

NOTE: that the original drawer runners (16) are no longer available.

Prior to March 2002 – 900IW204

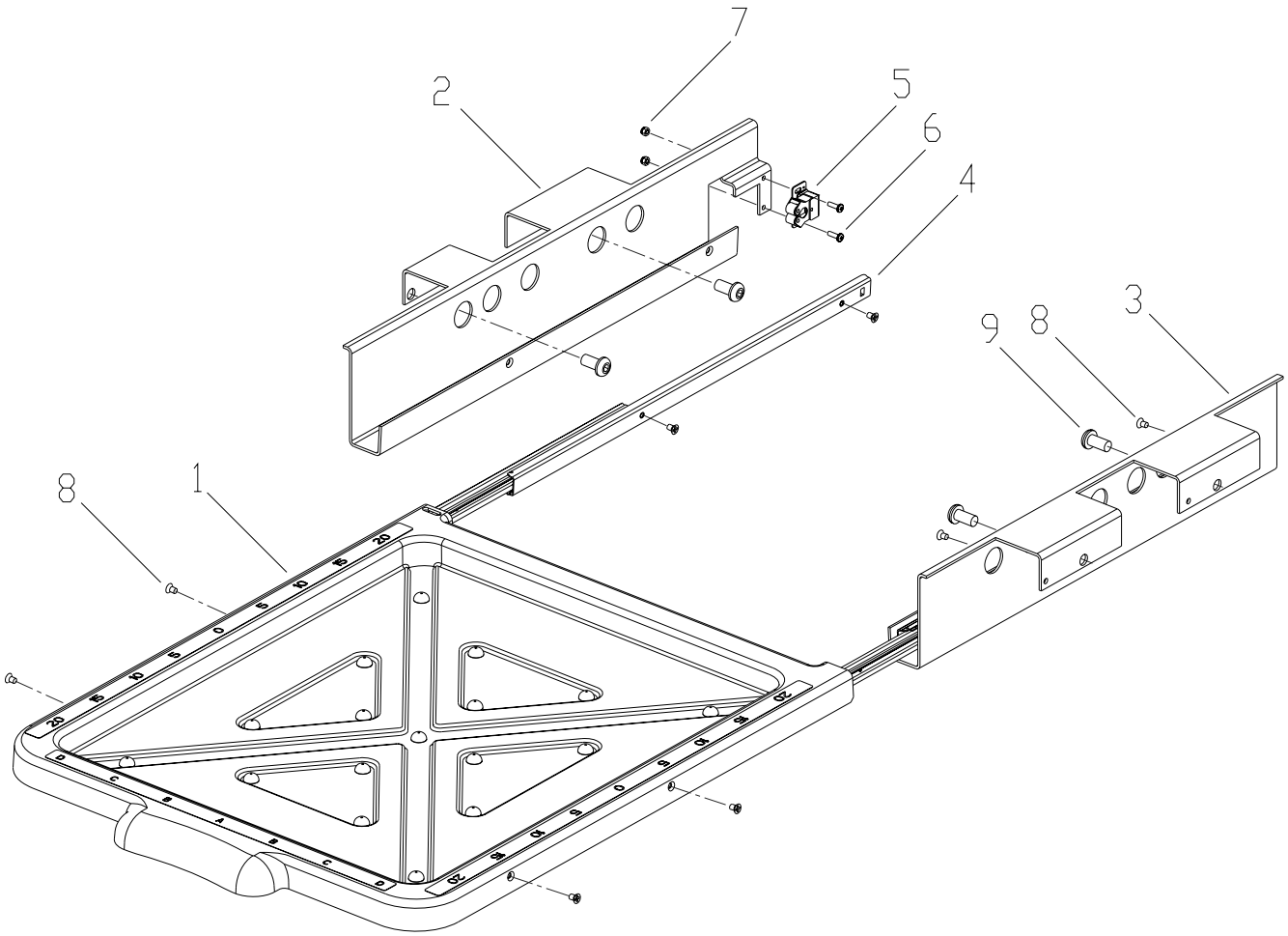
The original drawer runners 648040092 (16) had a hook which slotted into the rear of the x-ray tray (15) and employed a single screw (14) on each side to secure the tray in position.

10.2.2 900IW205 X-Ray Tray Assembly Parts List

Item	*Part Number*	*Description*
1	694042385	X-Ray Tray
2	642042078	Bracket Slide X-Ray Tray Left
3	642042079	Bracket Slide X-Ray Tray Right
4	661042050	Slider Assy X-Ray Tray - Pair
5	661042052	Roller Catch X-Ray
6	614040806	Screw M3 x 10 Pan Pozi Zn/St
7	621040506	Nut M3 Nyloc
8	614040329	Screw M4 x 6 Csk Pozi Zn/St
9	614040325	Screw M8 x 16 Allen Button Hd
	614040275*	Screw M4 x 10 Pan Pozi Zn/St
10	183041869	X-Ray sticker-side
11	183041870	X-Ray sticker-End
12	693041436	Foot bump-on

* This part is used to attach to Version 3.0 long bassinets and is not shown

10.2.3 900IW205 X-Ray Tray Assembly Diagram

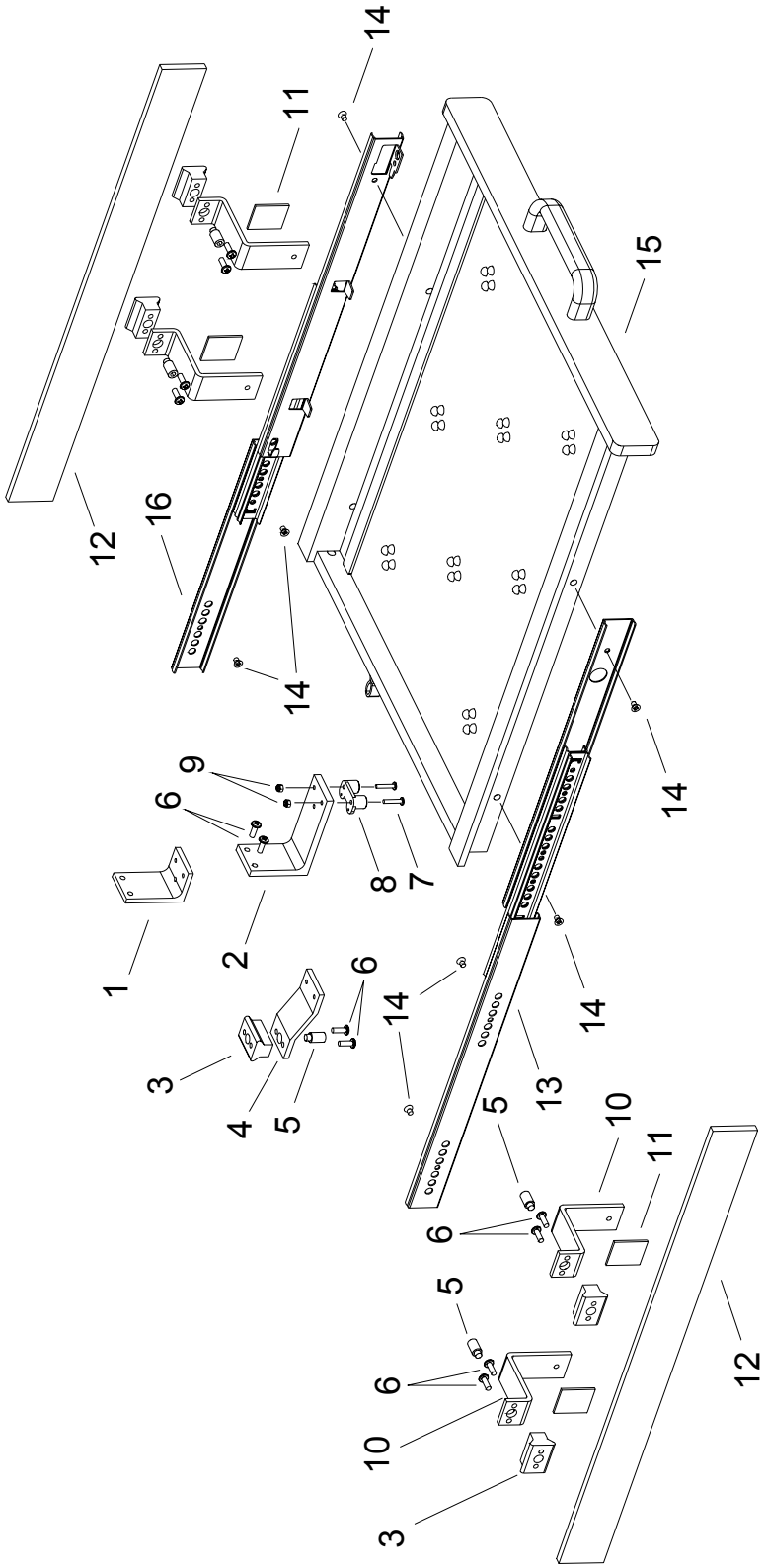


10.2.4 900IW204 X-Ray Tray Assembly Parts List

Item	*Part Number*	*Description*	
1	642042021	Bracket Latch X-Ray Std	
2	642042020*	Bracket Latch X-Ray Long*	
3	655040089	Block support	(pre August 2002)
4	641040792	Bracket latch support	
	*(641040838**	*Bracket Latch Support Long)**	
5	614040326	Screw M8 x 16 Grub Hex	
6	614040857	Screw M4x12 pan	
7	614040811	Screw M3x16 pan	
8	693040551	Catch x-ray tray	
9	621040506	Nut M3 Nyloc	
10	641040791	Bracket runner support	
11	193610025	Tape adhesive	
12	693041421	Side cover x-ray tray	
13	661042036	Drawer Runner Set pair	(post March 2002)
14	614040329	Screw M4x6 Csk	
15	693041422	X-ray tray	
16	648040092	Drawer runner	(pre March 2002)

* Denotes substitute part number to be used on 900IW212 Long Bassinets.

10.2.5 900IW204 X-Ray Tray Assembly Diagram



10.3 900IW215 Scales Mounting Kit

The 900IW215 Scales Mounting Kit enables the installation of Olympic Medical Model 42P Smart Scales. These scales are suitable for the US MARKET ONLY and can only be fitted to CosyCot™ warmers with long bassinets (900IW212).

- **Read the Olympic Smart Scale Instruction Manual completely prior to using this product.**
- **Check correct scales operation as described in the Olympic Smart Scale Instruction Manual.**
- **To ensure accurate weighing, the CosyCot™ Infant Warmer bassinet should be level when a reading is taken.**

10.3.1 900IW215 Scales Mounting Kit Parts List

Item	*Part Number*	*Description*	*Qty*
1	900IW301	Mounting Pole Short	1
2	254042001	Mattress Bassinet Scales	1
3	641042002	Bracket Support Scales IW2G	2
4	642042003	Block Support Scales IW2G	2
5	614040325	Screw M8 x 16 Allen Button Head	4
6	614040286	Screw M5 x 12 Pan Phillips	4
7	622040508	Washer M5 x 12	4
8	642042098	Pan Assembly Scales	1
9	614042143	Screw 8-32 Button Head screw	4
10	642042102	Bush steel DZUS 150003	4

Note: To upgrade to a quick release Infant scales system from Olympic Medical's fixed scales pan 043042810

Refer to the Olympic SmartScale Instruction Manual for specific details on scales calibration and servicing procedures

10.3.2

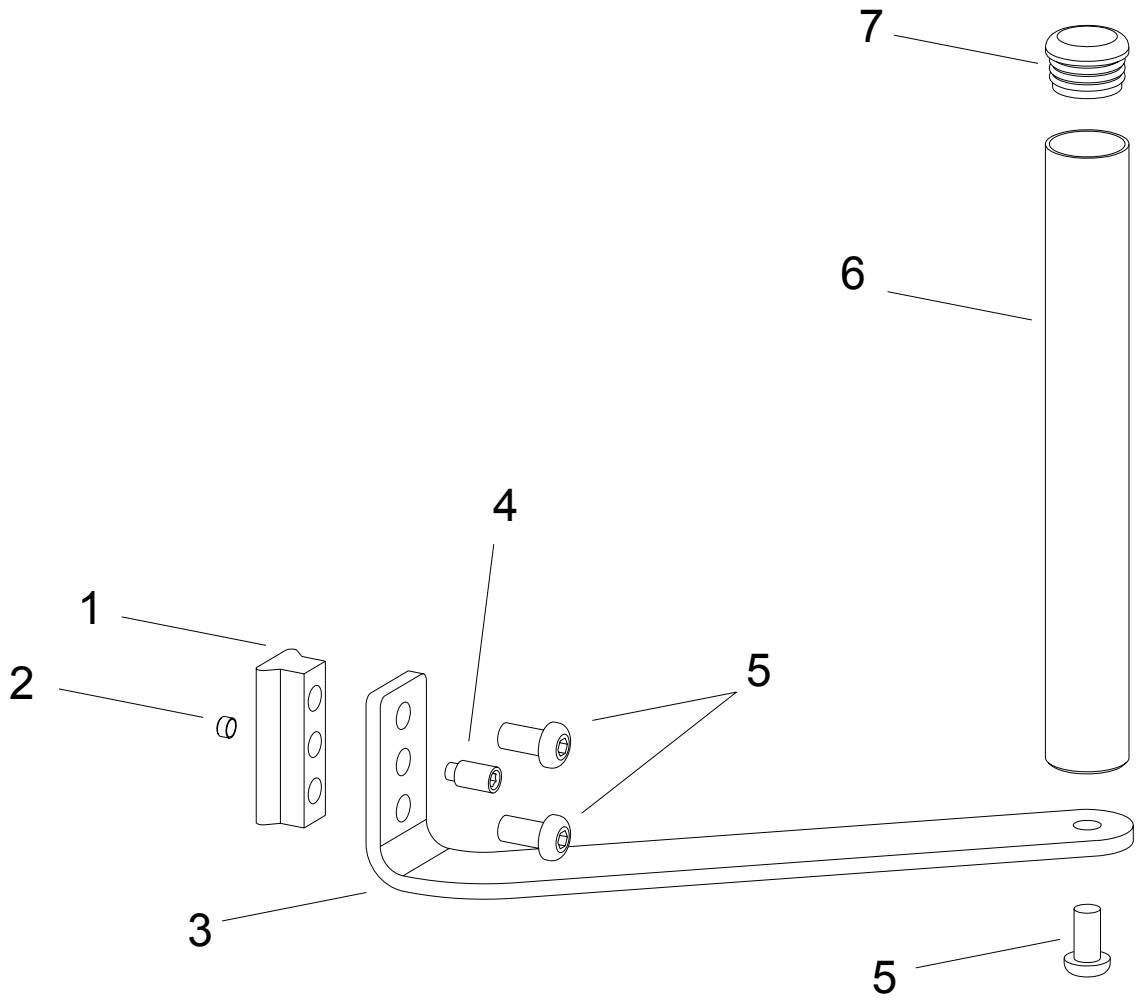
10.4 900IW301 Short Mounting Pole

WARNING
CARE SHOULD BE TAKEN TO ENSURE THAT THE MAXIMUM TOTAL ACCESSORY WEIGHT ON THE WARMER DOES NOT EXCEED THE MAXIMUM SPECIFICATION, REFER TO SECTION 2.8.2.

10.4.1 900IW301 Short Mounting Pole Assembly Parts List

Item	*Part Number*	*Description*
1	655040088	Block Support 50mm IW2G
2	693041419	Cap Grub Screw
3	641040779	Bracket Mtg Pole Accessory Left
4	614040326	Screw M8 x 16 Grub Hex Dog Point
5	614040325	Screw M8 x 16 Allen Button Head
6	651040202	Pole Instrument Mounting Short
7	693100019	Plug Plastic 1” Black

10.4.2 900IW301 Short Mounting Pole Assembly Diagram



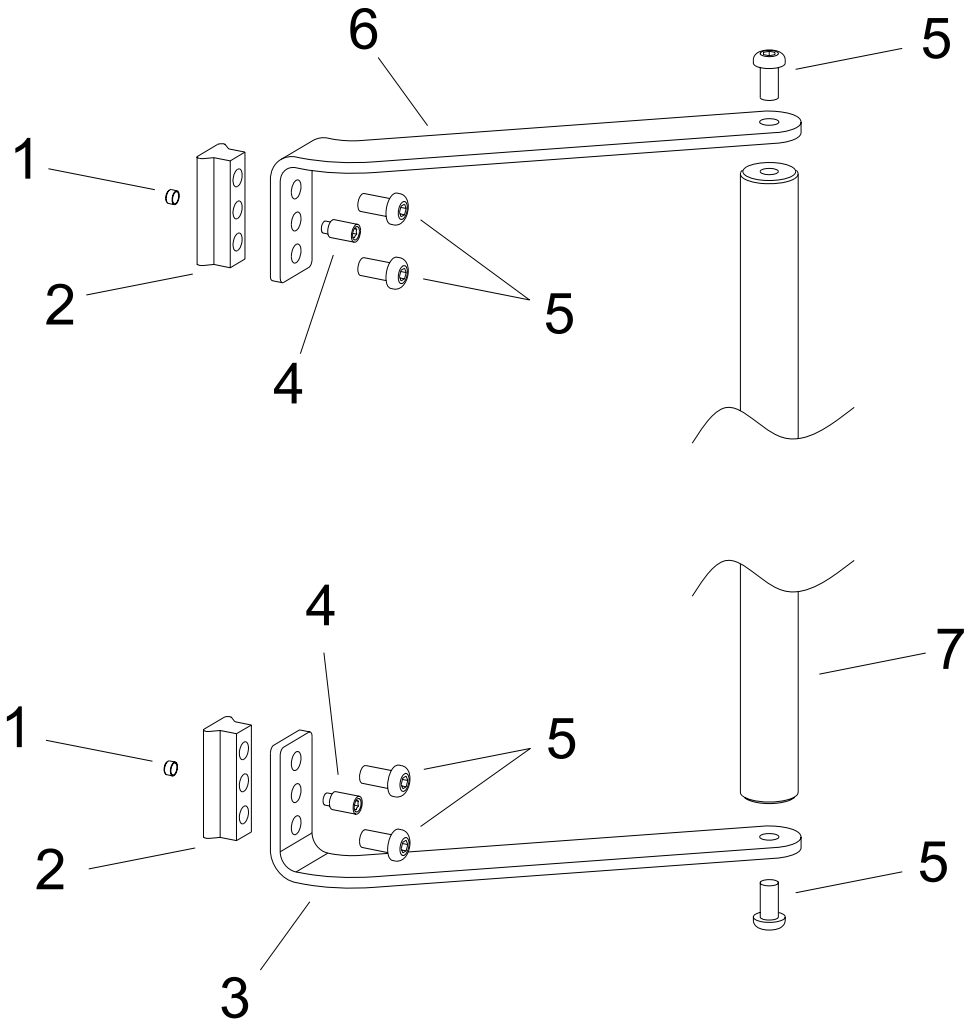
10.5 900IW302 Long Mounting Pole

WARNING
CARE SHOULD BE TAKEN TO ENSURE THAT THE MAXIMUM TOTAL ACCESSORY WEIGHT ON THE WARMER DOES NOT EXCEED THE MAXIMUM SPECIFICATION, REFER TO SECTION 2.8.2.

10.5.1 900IW302 Long Mounting Pole Assembly Parts List

Item	*Part Number*	*Description*
1	693041419	Cap Grub Screw
2	655040088	Block Support 50mm IW2G
3	641040779	Bracket Mtg Pole Accessory Left
4	614040326	Screw M8 x 16 Grub Hex Dog Point
5	614040325	Screw M8 x 16 Allen Button Head
6	641040780	Bracket Mtg Pole Accessory Right
7	651040203	Pole Instrument Mounting Long

10.5.2 900IW302 Long Mounting Pole Assembly Diagram

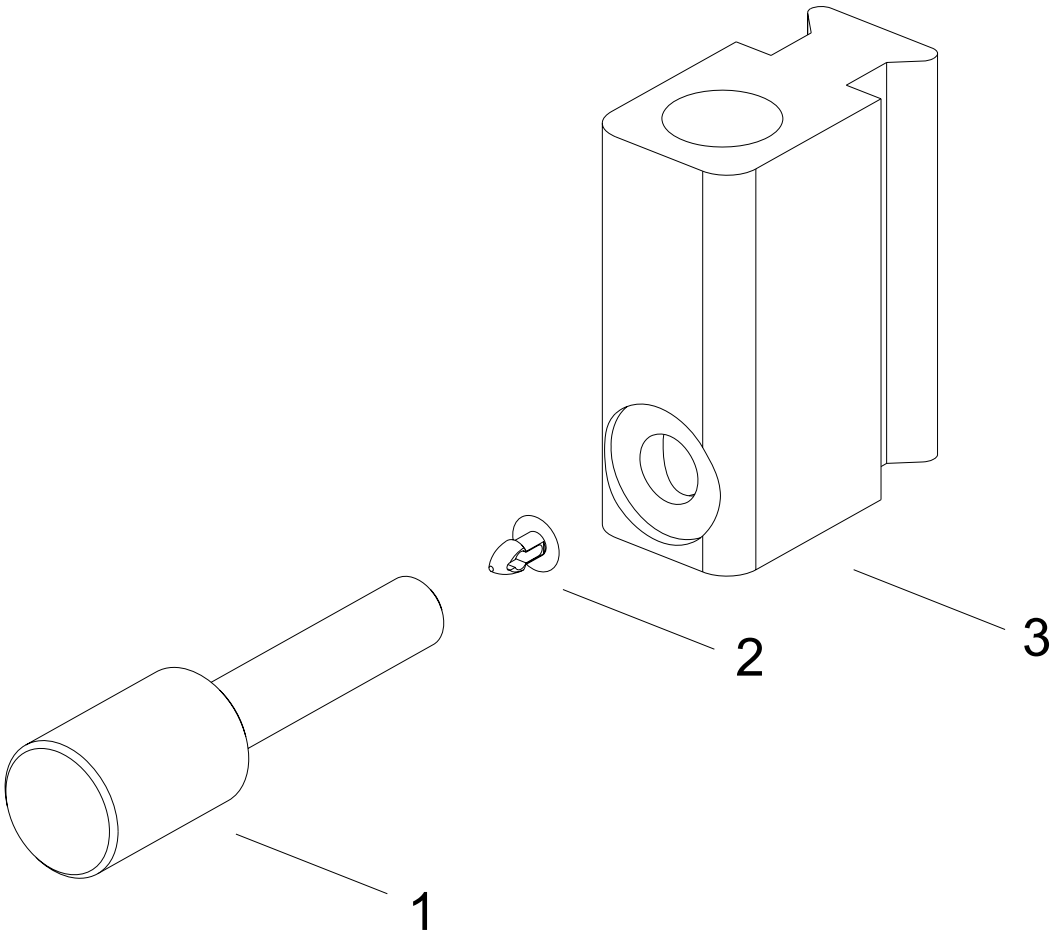


10.6 900IW303 Shelf / Medela Phototherapy Mounting Block

10.6.1 900IW303 Shelf / Phototherapy Mounting Block Assembly Parts List

Item	*Part Number*	*Description*
1	651040192	Knob Screw Assy M10 Length 46
2	336060132	Plug Hole Cover Natural Nylon
3	641040795	Block Support Dovetail IW2G

10.6.2 900IW303 Shelf / Phototherapy Mounting Block Assembly Diagram



10.7 900IW305 Hook Cable / Hose IW2G

WARNING
THE MAXIMUM WEIGHT LIMIT FOR EACH CABLE/HOSE HOOK IS 5KG (11LBS).

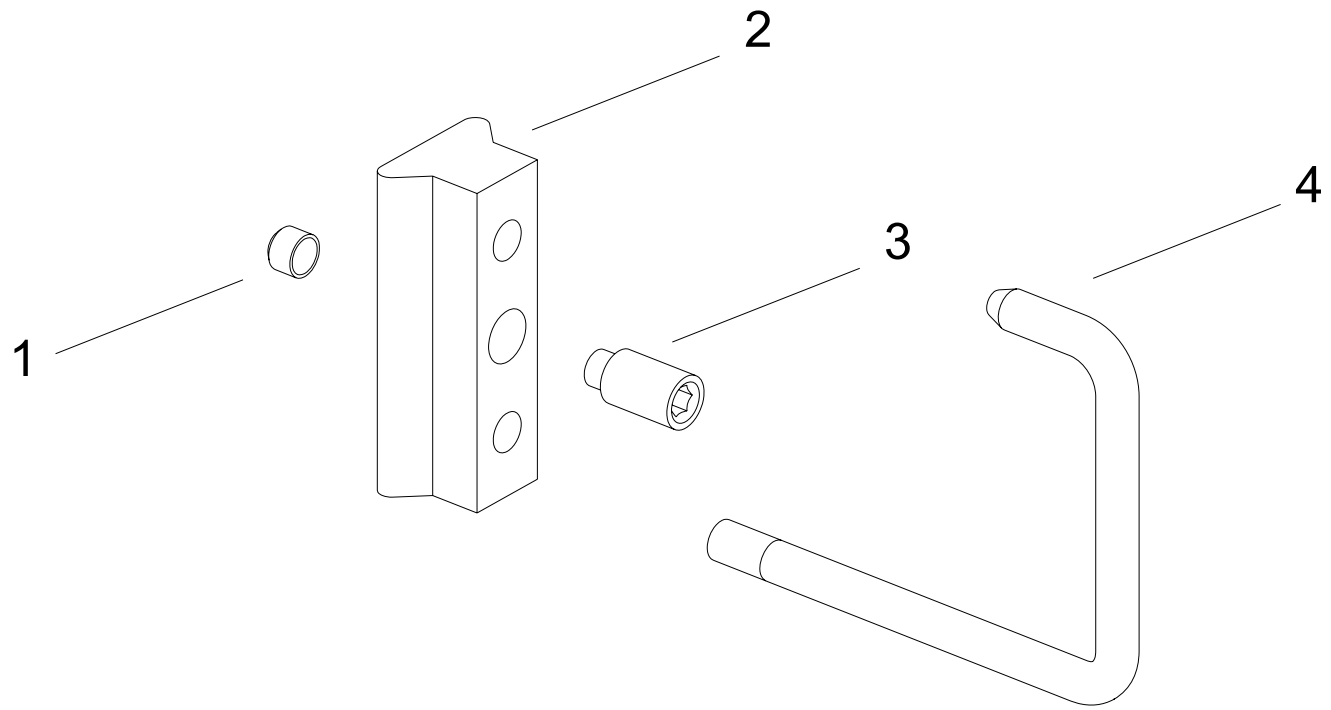
CARE SHOULD BE TAKEN TO ENSURE THAT THE MAXIMUM TOTAL ACCESSORY WEIGHT ON THE WARMER DOES NOT EXCEED THE MAXIMUM SPECIFICATION, REFER TO SECTION 2.7.2 AND 2.8.2.

10.7.1 900IW305 Hook Cable / Hose Assembly Parts List

Item	*Part Number*	*Description*
1	693041419	Cap Grub Screw
2	655040088	Block Support 50mm IW2G
3	614040326	Screw M8 x 16 Grub Hex Dog Point
4	642042016	Hook Cable/Hose IW2G

NOTE: Loctite 262 is used to prevent the hook (4) from unscrewing from the support block (2)

10.7.2 900IW305 Hook Cable / Hose Assembly Diagram



10.8 900IW306 Accessory Hook IW2G

WARNING
THE MAXIMUM WEIGHT LIMIT FOR EACH CABLE/HOSE HOOK IS 5KG (11LBS).

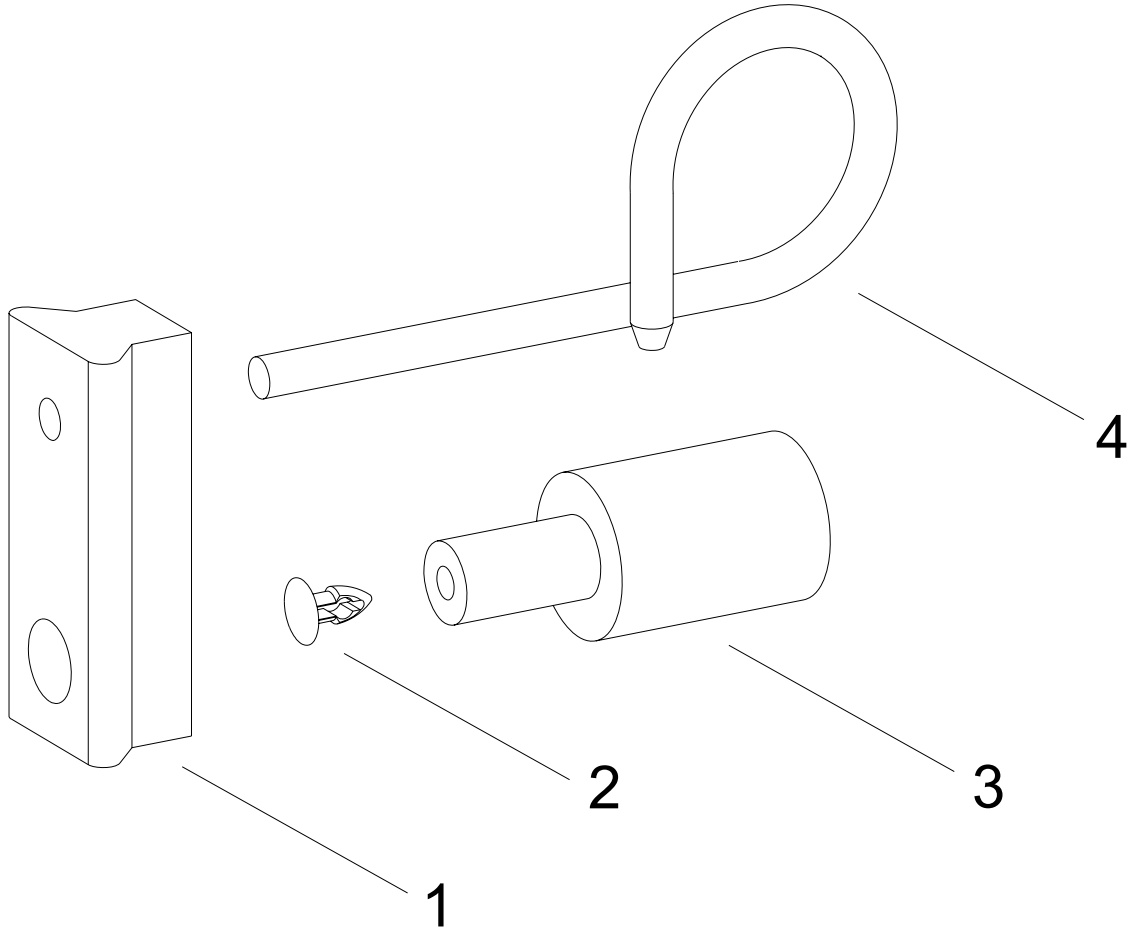
CARE SHOULD BE TAKEN TO ENSURE THAT THE MAXIMUM TOTAL ACCESSORY WEIGHT ON THE WARMER DOES NOT EXCEED THE MAXIMUM SPECIFICATION, REFER TO SECTION 2.7.2 AND 2.8.2.

10.8.1 900IW306 Accessory Hook Assembly Parts List

Item	*Part Number*	*Description*
1	655040084	Block Support Hook Accessory IW2G
2	336060132	Plug Hole Cover Natural Nylon
3	651040204	Knob Screw Assy M10 Length 18
4	651040172	Hook Water bag

NOTE: Loctite 262 is used to prevent the accesory hook (4) from unscrewing from the support block (1)

10.8.2 900IW306 Accessory Hook Assembly Diagram



10.9 900IW313 IV quad hook pole –bent

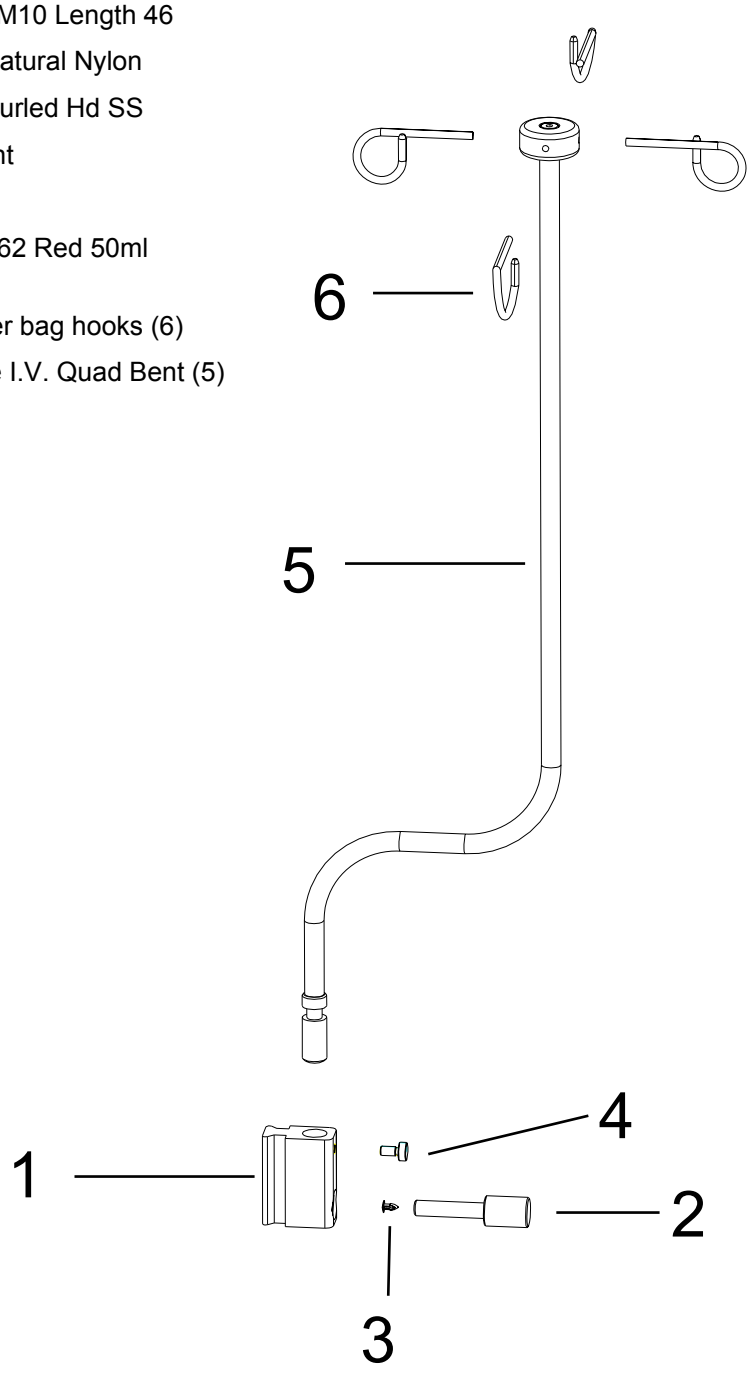
WARNING
THE MAXIMUM WEIGHT LIMIT FOR EACH CABLE/HOSE HOOK IS 1KG (2.2LBS), OR A TOTAL WEIGHT OF 4KG (8.8LBS).

CARE SHOULD BE TAKEN TO ENSURE THAT THE MAXIMUM TOTAL ACCESSORY WEIGHT ON THE WARMER DOES NOT EXCEED THE MAXIMUM SPECIFICATION, REFER TO SECTION 2.8.2.

10.9.1 900IW306 Accessory Hook Assembly Parts List

Item	*Part Number*	*Description*
1	642042053	Block Support Quad Pole
2	651040192	Knob Screw Assy M10 Length 46
3	336060132	Plug Hole Cover Natural Nylon
4	614042317	Screw M6 X 12 Knurled Hd SS
5	642042112	Pole I.V. Quad Bent
6	651040172	Hook Waterbag
7	111040084	Adhesive Loctite 262 Red 50ml

NOTE: Loctite 262 is used to prevent the water bag hooks (6) from unscrewing from the top boss of the Pole I.V. Quad Bent (5)

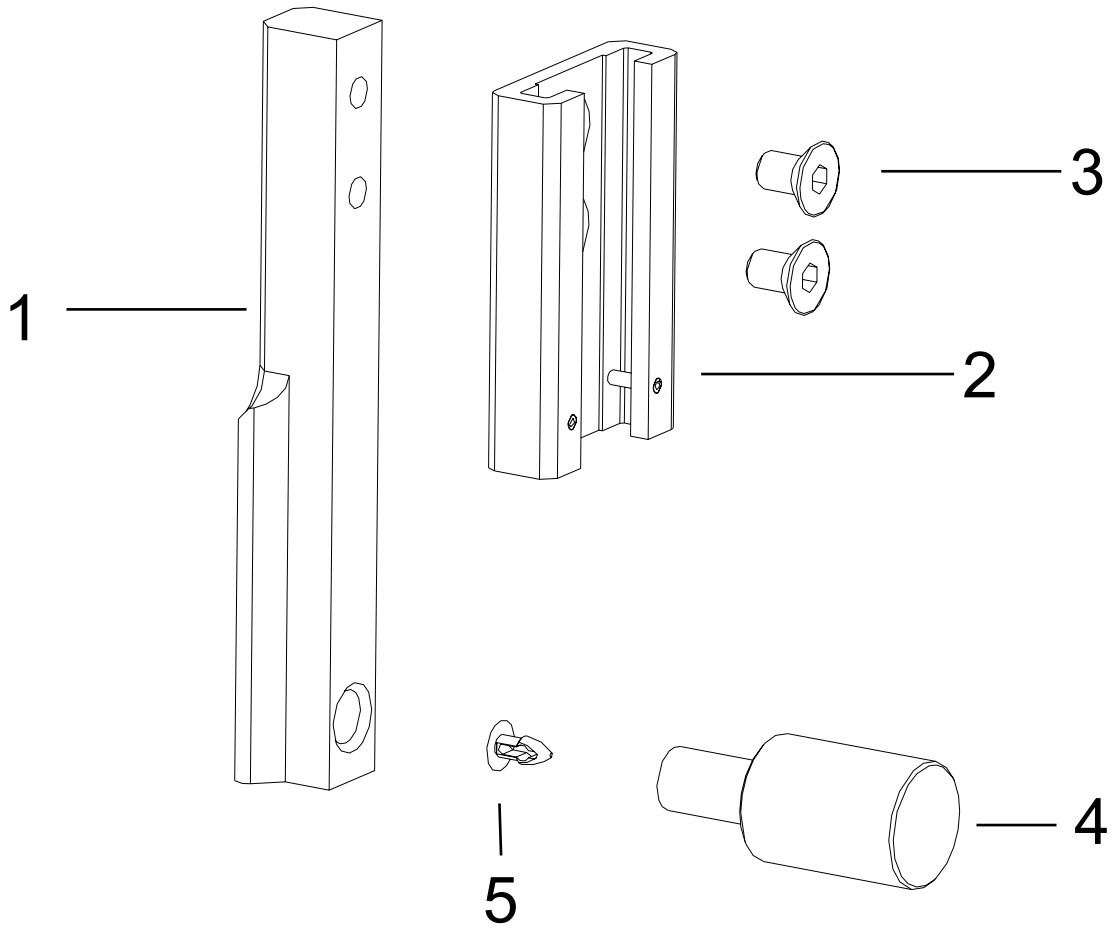


10.10 900IW314 Natus phototherapy mounting bracket

WARNING
CARE SHOULD BE TAKEN TO ENSURE THAT THE MAXIMUM TOTAL ACCESSORY WEIGHT ON THE WARMER DOES NOT EXCEED THE MAXIMUM SPECIFICATION, REFER TO SECTION 2.8.2.

10.10.1 900IW306 Accessory Hook Assembly Parts List

Item	*Part Number*	*Description*
1	641042006	6C Slot 30 X 5 Silver - For M6
2	642042116	Extrusion Dovetail Photothpy
3	614040227	Screw M6 X 16 Csk Allen S/S
4	651040204	Knob Screw Assy M10 Length 18
5	336060132	Plug Hole Cover Natural Nylon



10.11 900IW312A/J UPS Mounting Kit for CosyCot™ Infant Warmers

WARNING

THE UPS UNIT WEIGHS 19KG, CARE SHOULD BE TAKEN WHEN LIFTING OR MANOEUVRING THE UNIT.

CARE SHOULD BE TAKEN TO ENSURE THAT THE MAXIMUM TOTAL ACCESSORY WEIGHT ON THE WARMER DOES NOT EXCEED THE MAXIMUM SPECIFICATION, REFER TO SECTION 2.8.2.

Two components are required to provide an Uninterruptible Power Supply (UPS) to a 900 Series CosyCot™ Infant Warmer (IW93x, IW95x); the UPS itself and a mounting kit to secure it to the CosyCot™ Infant Warmer.

The mounting kit is voltage specific to ensure the connection cable has the correct plugs.
900IW312J (120V)
900IW312A (230V)

At full element power (100%) and no other loads the UPS will power the warmer for approximately 10 minutes when fully charged. At 50% element power and no other loads the UPS will power the warmer for approximately 22 minutes

The UPS can be installed with a CosyCot™ fitted with the storage drawer system (900IW408). On CosyCot™'s manufactured prior to February 2004 the UPS can be installed with one large bin (900IW403) or one small bin (900IW405).

WARNING

CosyCot™ will not operate from mains without UPS switched on.

Read POWERVAR User Guide completely before using this product.

Do not cover louvres on shroud.

Do not operate phototherapy lamp when the CosyCot™ is disconnected from mains and is being powered by the UPS.

Keep Dry

10.11.1 UPS Technical Specifications

The PowerVar UPS contains an isolating transformer to minimise earth leakage currents and provides a true sinusoidal output.

The model depends on the mains supply voltage of the hospital:

For 120V mains supply	For 230V mains supply
POWERVAR Uninterruptible Power Manager Model ABCE800–11IEC Conforms to UL2601-1 and cUL C22.2 No. 601.1	POWERVAR Uninterruptible Power Manager Model ABCE800–22IEC Conforms to IEC 60601-1, VDE, CE, and EN60601-1.

Model:	PowerVar Inc. UPS ABCE800-11IEC or ABCE800-22IEC (voltage dependent)		
VA Rating:	800VA		
Watt Rating:	520W		
Input Current:	4.0A		
Output Current:	3.5A		
Weight:	19kg		
Warranty:	Batteries – Two Years*		
	Materials and Workmanship – Five Years*		
Standards:	IEC 60601-1	UL2601-1	VDE
CE Marked	EN60601-1	cUL C22.2 No. 601.1	

NOTE: *Warranties supplied by PowerVar

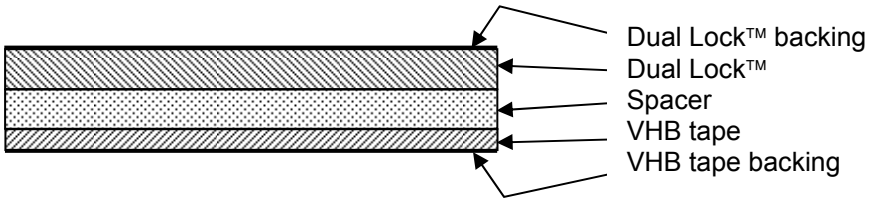
10.11.2 PowerVar Contact Details:

FOR THE US:	For Europe :
POWERVAR Inc, 1450 Lakeside Drive Waukegan, IL 60085 United States of America. Tel: 001 847 596 0700 Fax: 001 847 596 7100	POWERVAR, Ltd. 61 Shrivenham Hundred Business Park, Shrivenham, Swindon, Wiltshire SN6 8TZ United Kingdom Tel: +44 (0) 1793 786050 Fax: +44 (0) 1793 782250

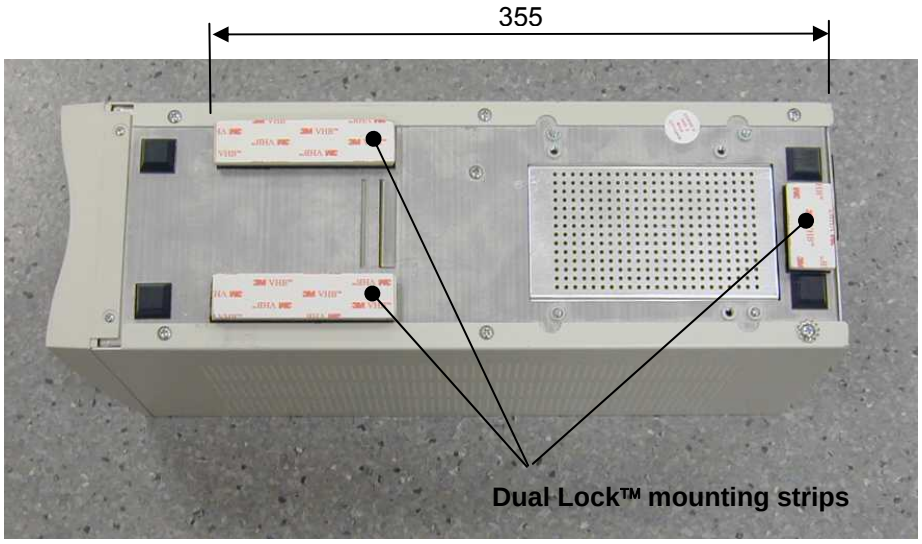
Further information about the POWERVAR range of products and the above UPS units can also be obtained from their website at www.powervar.com .

10.11.3 Mounting Kit

The 900IW312X UPS Mounting Kit comes with spacers – these lift the installed UPS off the CosyCot™ base to ensure free cooling airflow to the UPS. The spacers come with pre-applied tape to adhere to the base and Dual Lock™ to adhere to the UPS. Dual Lock™ is a form of industrial strength Velcro that can be detached and reattached multiple times.



10.11.4 Figure of the cross-section of the spacer



10.11.5 Underside of UPS – showing position of Dual Lock™ mounting strips.

10.11.6 Servicing the UPS

WARNING

- **Only qualified personnel should carry out service & maintenance procedures.**
- **To avoid the possibility of electric shock hazard when performing maintenance procedures, disconnect the UPS and CosyCot™ from mains power.**

To Remove the UPS from the Warmer Base:

- Remove the shroud by detaching the Dual Lock™.

NOTE: This requires some force, grasp the shroud near the Dual Lock™ when removing to minimise any bending or damage to the shroud.

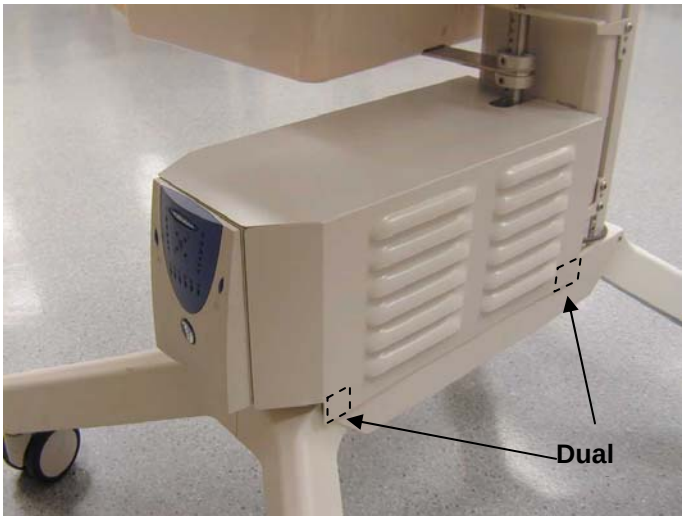
- Unplug the UPS from the CosyCot™ Infant Warmer and from the wall.
- Lock the CosyCot™ castors.
- Pull sideways on the top of the UPS to detach the Dual Lock™ on one side.

NOTE: this will require some force.

- Once one side is detached the UPS can be removed by lifting and detaching from the remaining two Dual Lock™ strips.

NOTE: The UPS is heavy (19kg).

- For information on servicing for the UPS itself refer to the PowerVar User Manual.
- When replacing the UPS after servicing, align the Dual Lock™ and press down on the UPS, an audible click should be heard on engagement.
- Attach the power cords, from the wall to the UPS and from the UPS to the CosyCot™
- Place the shroud back over the UPS, and slide back until it touches the column. This will align the Dual Lock™ which is engaged with pressure. An audible click should be heard on engagement.



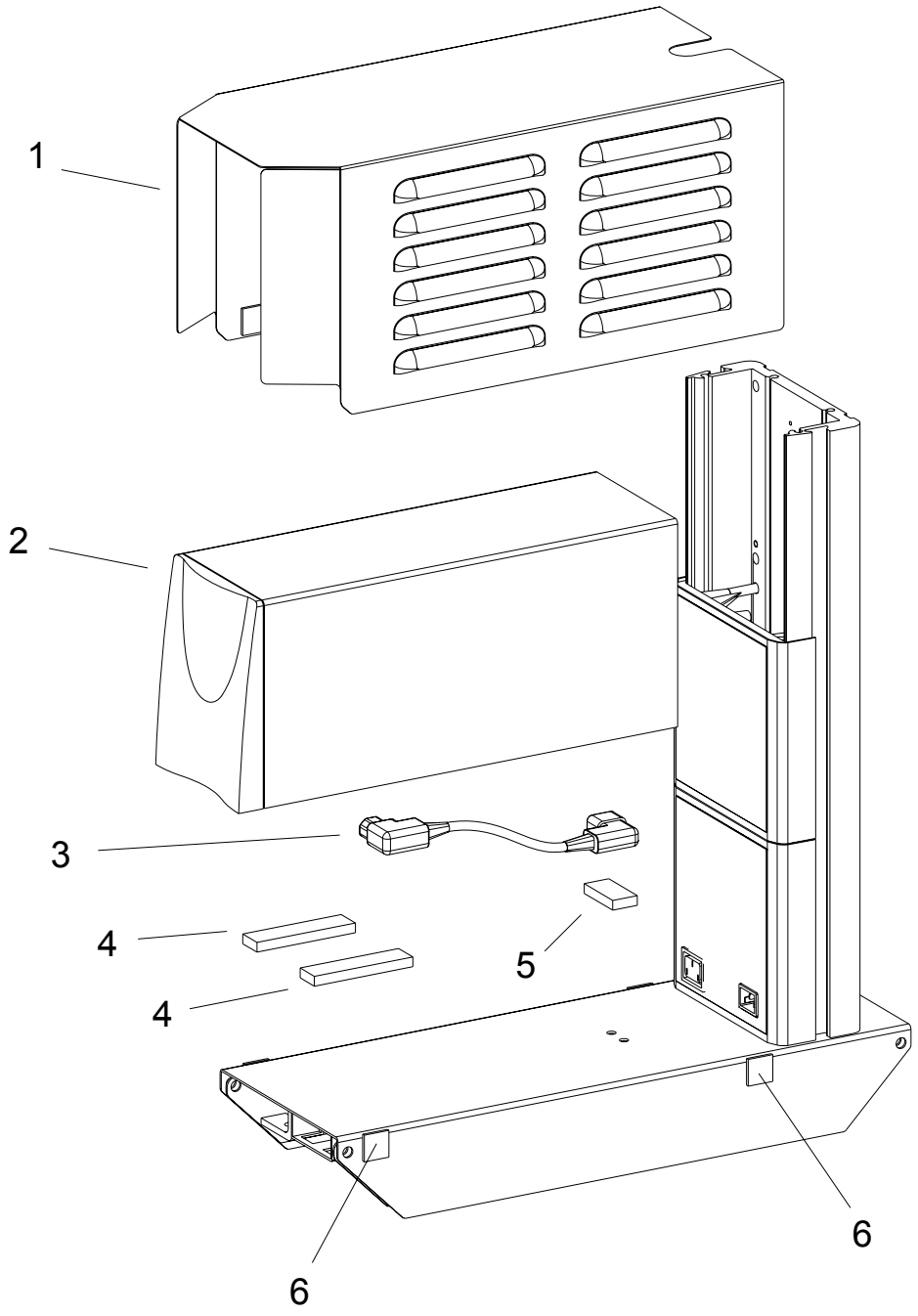
10.11.7 UPS Shroud and Location of Dual Lock™ mounting squares.

10.11.8 900IW312A/J UPS Mounting Kit Assembly Parts List

Item	*Part Number*	*Description*	
1	642042039	Shroud UPS	
2		PowerVar UPS	
3	043042205	Mains Lead Assy – UPS/Warm 230V	Used on 900IW312A only
	043042138	Mains Lead Assy – UPS/Warm 120V	Used on 900IW312J only

NOTE: Parts (4), (5) and (6) are available as kit 043042395 Kit Spacer UPS. These parts use a double sided 3M VHB tape and Dual Lock™, an industrial strength Velcro, and are difficult to remove once installed.

10.11.9 900IW312A/J UPS Mounting Kit Assembly Diagram



10.12 900IW401 Side Shelf and Support Block

WARNING
THE MAXIMUM WEIGHT LIMIT FOR EACH SHELF IS 15KG (33LBS).

CARE SHOULD BE TAKEN TO ENSURE THAT THE MAXIMUM TOTAL ACCESSORY WEIGHT ON THE WARMER DOES NOT EXCEED THE MAXIMUM SPECIFICATION, REFER TO SECTION 2.8.2.

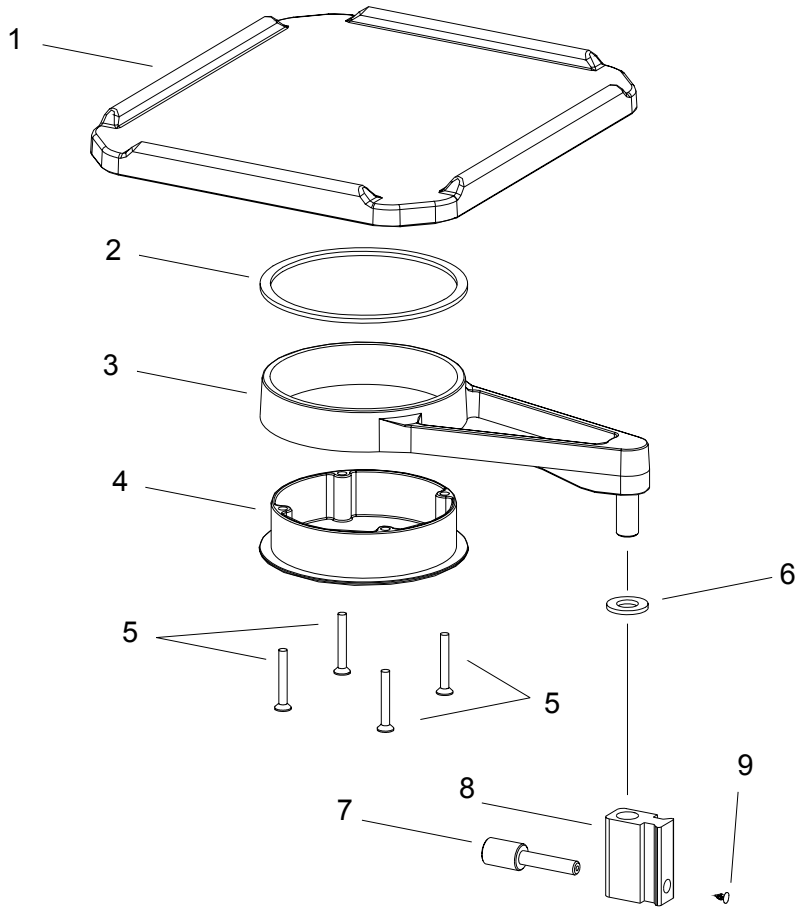
The introduction of a molded shelf (1) in August 2001 meant the plastic shelf swivel washer (2) was no longer required. At the same time the M6 x 50mm CSK Pozi screw (5) was changed to a 45mm screw.

10.12.1 900IW401 Side Shelf and Support Block Assembly Parts List

Item	*Part Number*	*Description*	
1	694042082	Shelf Plastic Warmer	
2	622040146	Washer Shelf Swivel Plastic	(used prior to August 2001)
3	656040033	Shelf Arm Warmer	
4	693040601	Shelf Swivel Warmer	
5	614042003	Screw M6 x 45mm CSK Pozi	
	614041474	Screw M6 x 50mm CSK Pozi	(used prior to August 2001)
6	621042002	Washer Nylon 15.8 x 25.4 x 2	
7	651040192	Knob Screw Assy M10 Length 46	
8	641040795	Block Support Dovetail	
9	336060132	Plug Hole Cover Natural Nylon	

NOTE: Loctite 262 is used to prevent the screws (5) from unscrewing from the plastic shelf (1)

10.12.2 900IW401 Side Shelf and Support Block Assembly Diagram



10.13 900IW408 Storage Drawer System

WARNING
THE MAXIMUM WEIGHT LIMIT IS 7KG (15LBS).

CARE SHOULD BE TAKEN TO ENSURE THAT THE MAXIMUM TOTAL ACCESSORY WEIGHT ON THE WARMER DOES NOT EXCEED THE MAXIMUM SPECIFICATION, REFER TO SECTION 2.8.2.

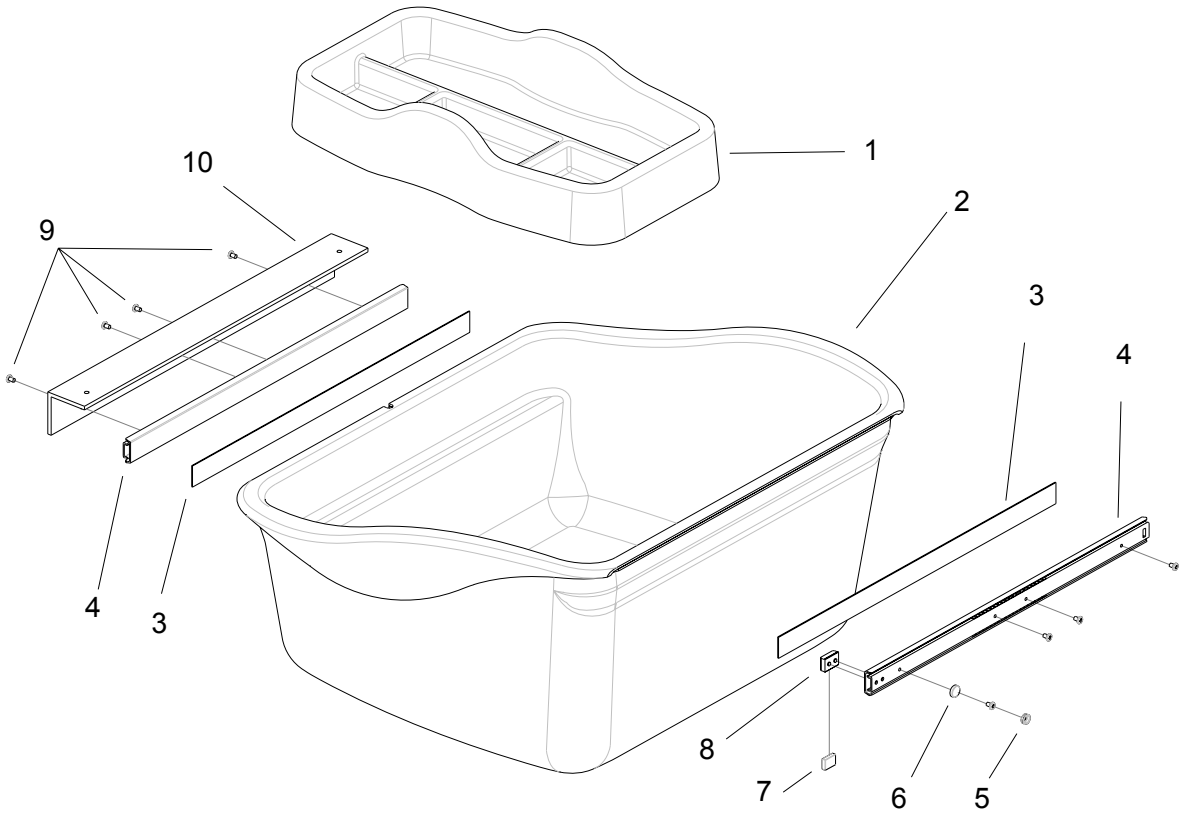
Manufactured from February 2004

10.13.1 900IW408 Storage Drawer System Assembly Parts List

Item	*Part Number*	*Description*
1	694042308	Tray Multi – purpose
2	694042306	Storage Drawer Sliding
3	188042022	Tape VHB4951 Grey 25.4mmx33m
4	661042066	Slider Assy Storage Bin – each
5	621042018	Snap Cap – Cream 8/8 Matt
6	621042019	Snap Cap – Washer 6/8 F/B
7	432042008	Magnet Drawer Slide Nd-Fe-B
8	694042573	Magnet Holder – Drawer Slide
9	614042334	Screw M4x6 Pan Phil SS
10	642042069	Bracket Slider Support

Note from February 2004 to September 2005 Item 4 was Slider 661042044 stamped slidingCO. This slider requires Magnet holder 694042416 item 8.

10.13.2 900IW408 Storage Drawer System Assembly Diagram



10.14 900IW403/5 Storage Bins with 900IW308 Bin Mounting Pole

WARNING
THE MAXIMUM WEIGHT LIMIT FOR EACH BIN IS 5KG (11LBS).

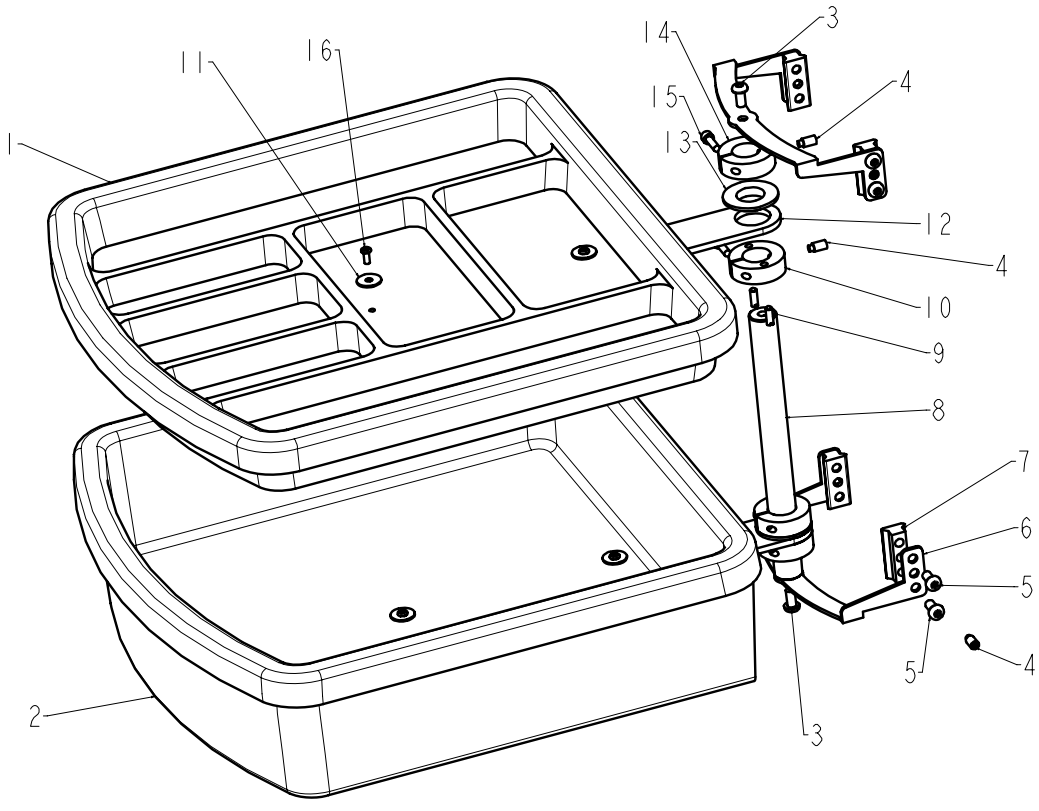
CARE SHOULD BE TAKEN TO ENSURE THAT THE MAXIMUM TOTAL ACCESSORY WEIGHT ON THE WARMER DOES NOT EXCEED THE MAXIMUM SPECIFICATION, REFER TO SECTION 2.8.2.

Manufactured from Jan 1997 to February 2004

10.14.1 900IW403/405 Storage Bins and 900IW308 Mounting Pole Assembly Parts List

Item	*Part Number*	*Description*
1	900IW405	Storage bin small
2	900IW403	Storage bin large
3	614040309	Screw M8 x 20 Cap Low Profile SS
4	614040326	Screw M8x16 grub
5	614040325	Screw M8 x 16 Allen Button Head
6	641040789	Bracket storage bin
7	655040088	Block support 50mm
8	648040150	Pole mounting storage bin
9	661040013	Ball stop M8
10	651040212	Collar locking
11	622040165	Washer M5x22x1.5 SS
12	651040213	Arm bin support
13	653040122	Bush bin support
14	651040212	Collar locking
15	614040168	Screw M6x20 cap SS
16	614040400	Screw M5x16 SS

10.14.2 900IW403/405 Storage Bins and 900IW308 Mounting Pole Assembly Diagram



PART 11: 900IW130x Neopuff™ Module

11.1 Performance Characteristics and Specifications

WARNING

- Input gas flow rate 5-15 LPM, recommended operating gas flow rate 8 LPM.
- Do not attempt to use a higher gas flow rate than 15 LPM.
- Factory setting of pressure relief valve is at 40cm H_2O. This setting is user adjustable up to 80cm H_2O. Do not attempt to set the pressure relief valve above 80cm H_2O. Reset pressure relief valve to 40cm H_2O after use (refer section 11.3.4).
- Use only recommended Fisher & Paykel Healthcare RD900 Infant Resuscitator accessories.
- Do not use substances that are incompatible with O_2.

11.1.1 Typical Performance

Peak inspiratory pressure range

@ 5 LPM	approx.	2-73cm H_2O [mbar]
@ 8 LPM	approx.	4-73cm H_2O [mbar]
@ 10 LPM:	approx.	5-75cm H_2O [mbar]
@ 15 LPM	approx.	10-77cm H_2O [mbar]

Input gas flow range:

Minimum	5 LPM
Maximum	15 LPM

PEEP range at:

5 LPM	approx.	1-5cm H_2O [mbar]
8 LPM	approx.	1-9cm H_2O [mbar]
10 LPM	approx.	2-15cm H_2O [mbar]
15 LPM	approx.	4-25cm H_2O [mbar]

At any particular set point, if the gas flow rate increases from 5 to 15 LPM, peak pressure values will increase by approximately 8cm H_2O [mbar].

Operating time (400 litre cylinder):

5 LPM	80 minutes
10 LPM	40 minutes
15 LPM	26 minutes

PLEASE NOTE: All performance figures listed above are representative only.

11.1.2 Technical Specifications

Manometer range:	-20 to 80cm H_2O [mbar]
Manometer accuracy:	+/-2.0% of FSD
Maximum pressure setting: (dependent on flow rate)	65-80cm H_2O [mbar]
Dimensions:	
Height	250mm (9.8”)
Width	200mm (7.9”)
Depth	100mm (3.9”)
Weight	2.1kg (4.6lb)
Operating and storage	-20^{0}C to 50^{0}C, up to 90% humidity
Recommended patient body weight:	0-10kg (22lb)
Delivered oxygen concentration:	Up to 100%

11.2 Cleaning of the Neopuff™ Infant Resuscitator

11.2.1 CAUTION

- DO NOT use any compounds containing aromatic hydrocarbons, ammonia, aqueous alkaline solutions or abrasive products.
- Ensure all oxygen and air supplies are turned off and disconnected from the RD900 Infant Resuscitator before performing cleaning procedures. Explosion and fire hazards can exist when performing cleaning procedures in an oxygen-enriched environment.
- Before cleaning, remove and discard all used single-use products appropriately.
- Do not attempt to clean or reuse single use RD900 Infant Resuscitator products.
- The methods of cleaning described below are suitable for the components, but the suitability of any method for a particular bacteriological situation is the responsibility of the user.
- Do not autoclave or gas sterilize the RD900 Infant Resuscitator.
- Ensure all parts and accessories are checked before returning the device to service

11.2.2 Cleaning Instructions

Clean the external surfaces of the RD900 Infant Resuscitator as frequently as indicated by hospital procedure using a damp cloth with dilute mineral acids, an acid-salt solution, isopropyl alcohol or correctly diluted disinfectant-detergent solution. Ensure that the manufacturer's directions for use of the cleaning agent are followed. Preferably cleaning solutions should be wiped off with a separate cloth and clean fresh water. Dry all surfaces after cleaning with a clean soft cloth or paper towel.

11.2.3 Cleaning of the Test Lung

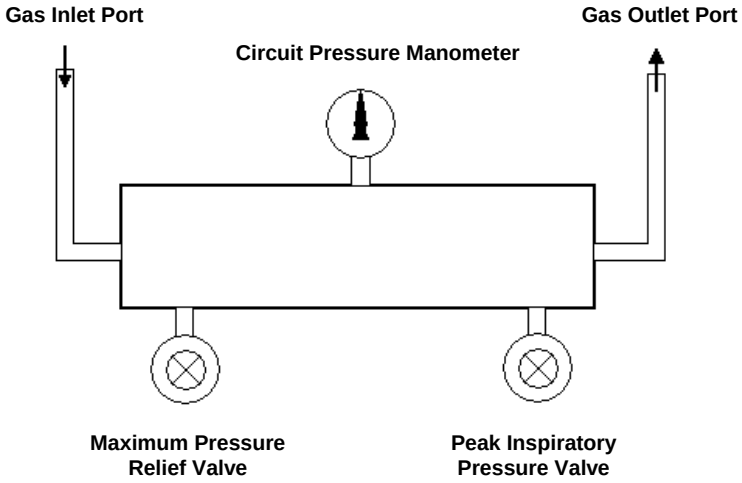
If required the test lung can be sterilized using ethylene oxide gas only. Some carrier gases can cause stress cracking and are not suitable, if in doubt check with chemical supplier.

⚠ ***WARNING*** – The test lung contains natural rubber latex which may cause allergic reactions.

CAUTION Latex is susceptible to attack by solvents. Ensure no solvents are used to clean the test lung.

11.3 Service Information

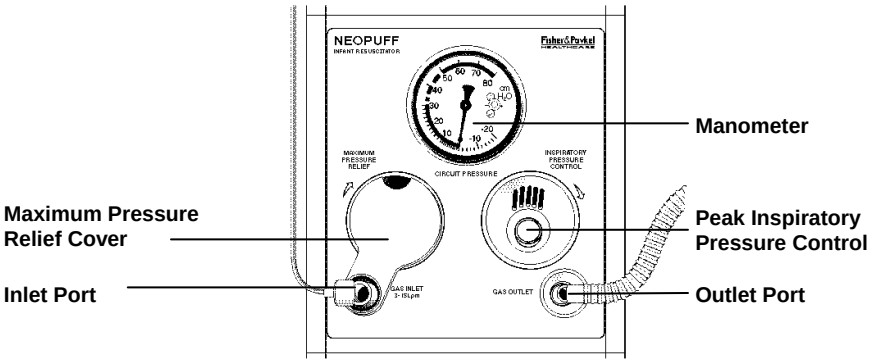
11.3.1 Functional schematic



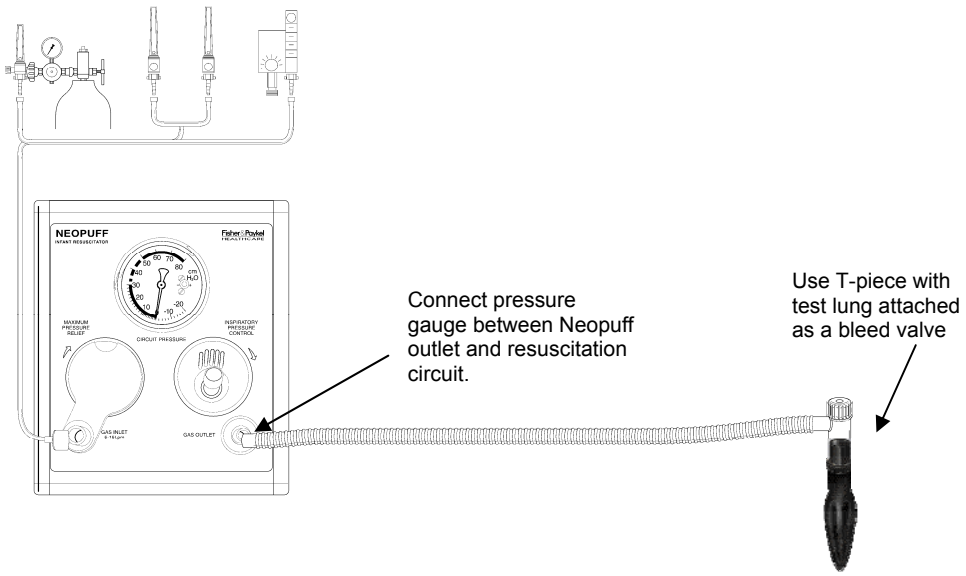
11.3.2 Preventative Maintenance

- The integrity of the system and manometer should be checked annually and after servicing using the Testing of RD900 Performance procedure (11.3.3). This check should also be carried out after any mechanical shock or other trauma.
- All maintenance and service procedures must be carried by qualified personnel using only Fisher & Paykel Healthcare parts.
- Always ensure gas passages are free from contaminants, especially hydrocarbons, oils and grease, prior to re-assembly.
- Please contact an authorised Fisher & Paykel Healthcare representative for further assistance with any servicing or maintenance requirements.
- The test lung is a consumable item; it should be monitored for signs of wear and material degradation and replaced as required.

11.3.3 Testing of Neopuff™ Performance (Manometer and valve system)



The integrity of the Neopuff™ manometer and valve system can be tested by following the instructions in overleaf. The inlet port must be connected to an air supply capable of generating constant flow at 5, 10 and 15LPM, and a certified gauge and bleed valve should be available to check the manometer accuracy. The Neopuff™ resuscitation circuit and t-piece can be used in place of a bleed valve as shown overleaf.



Testing of the manometer

1. Lift the cover off the maximum pressure relief valve slightly and turn out of the way.
2. Disconnect all devices from the RD900 outlet port. Check that the manometer needle is within ±2cm H_2O of zero on the manometer gauge. If the manometer does not read zero, the resetting of the manometer to zero (11.3.5) procedure should be followed**.**
3. Connect the outlet of the RD900 Infant Resuscitator to a bleed valve and the certified gauge being used. Set the gas supply to 10LPM. Completely close the peak inspiratory pressure control by turning the knob completely clockwise. With the bleed valve closed, adjust the peak inspiratory pressure knob to set the pressure so that the manometer reads 10, 20, and 40cm H_2O. Check that the certified gauge reads within ±2cm H_2O of these values at each set point.
4. With the pressure set to 40cm H_2O open and close the bleed valve 3 times and check the manometer needle rises and falls smoothly.

If the RD900 Infant Resuscitator fails any of these tests, the manometer should be regarded as inaccurate and replaced with a new manometer (P/No 043040841).
Follow the manometer replacement guidelines in section 11.3.6 of this manual, or contact your Fisher & Paykel Healthcare service representative for further guidance.

Testing of the valve system

1. Set the gas supply to 5LPM. Completely close the peak inspiratory pressure control and the maximum pressure control by turning both knobs completely clockwise. Close the bleed valve and check that the manometer reads greater than 65cm H_2O.
2. Set the gas supply to 15LPM. Close the bleed valve and check that the manometer reads less than 80cm H_2O.
3. Set the gas supply to 10LPM. Close the bleed valve and turn the maximum pressure relief valve until the manometer reads 40cm H_2O. Check that the manometer needle rotates smoothly. Gently rotate the maximum pressure relief cover over the maximum pressure relief knob.
4. Reset the peak inspiratory pressure to 20cm H_2O and turn off the gas flow. Testing is now complete.

If the RD900 Infant Resuscitator fails any of these tests, the valve assembly should be regarded as faulty and replaced with a new valve assembly (See the parts list (11.4.1) for part numbers). Follow the valve replacement guidelines in section 11.3.7 of this manual, or call your Fisher & Paykel Healthcare service representative for further information.

11.3.4 Setting Maximum Pressure Relief to 40cm H_2O

This is required if the maximum pressure relief has been changed. The factory setting for the maximum pressure setting is 40cm H_2O. Alternative settings for the maximum pressure relief should be made in accordance with hospital protocol.

1. Adjust gas flow to 10 LPM.
2. Close the peak inspiratory pressure valve by turning the knob fully clockwise
3. Adjust the maximum pressure relief knob clockwise or counter-clockwise until the manometer reads 40cm H_2O.
4. Turn the peak inspiratory pressure knob anticlockwise so the manometer reads 20cm H_2O and shut off the gas flow.

11.3.5 Resetting the Manometer to Zero

1. To set the manometer to zero:
2. Disconnect the RD900 Infant Resuscitator from any other equipment.
3. Remove opaque plastic plug in the lens of the manometer.
4. Using a suitable slot screwdriver carefully adjust the screw in the manometer face clockwise or counter-clockwise to reset the manometer to zero. Care must be taken when doing this, as over-rotation of the screw can damage the manometer.
5. Replace the plastic plug in the lens of manometer.
6. Verify that the manometer needle is now within $\pm$2.0cm H_2O of zero. If not, repeat the above procedure.

11.3.6 Manometer Replacement

The manometer is not a serviceable item and must be replaced by Manometer Kit 043040841.

1. Remove back cover, fixed by four screws
2. Disconnect tube from manometer.
3. Remove manometer by unscrewing the two retaining nuts
4. Fit the new manometer into front panel, tighten retaining nuts and re-connect manometer tube.
5. Record date code found on back of replacement manometer and serial number of RD900 Infant Resuscitator from back cover and send copy to Fisher & Paykel Healthcare, Attention Neonatal Quality Engineer.
6. Re-fit front panel to back cover with four screws.
7. Carry out manometer performance test as per Section 11.3.3.

11.3.7 Valve Replacement

NOTE: the valves are an integral part of the valve, panel and manifold assembly and are not able to be serviced. Please specify model number from parts list (11.4.1) when ordering a replacement valve assembly.

1. Remove back cover, fixed by four screws
2. Remove end cap plugs and remove end caps by unscrewing four cap screws per end.
3. Disconnect tube from manometer.
4. Remove manometer by unscrewing the two retaining nuts
5. Record valve assembly and RD900 Infant Resuscitator serial numbers and send copy to Fisher & Paykel Healthcare, Attention Neonatal Quality Engineer.
6. Fit existing manometer into new valve assembly panel, tighten retaining nuts and re-connect manometer tube.
7. Re-fit front panel to back cover with four screws from step 1.
8. Re-fit end caps with four cap screws per end and replace plugs from step 2.
9. Carry out valve system performance test as per Section 11.3.3.

11.4 900IW130x Neopuff™ Module Assembly - Version 2

Units manufactured after May 1999 – serial numbers after 99R9xxx083.

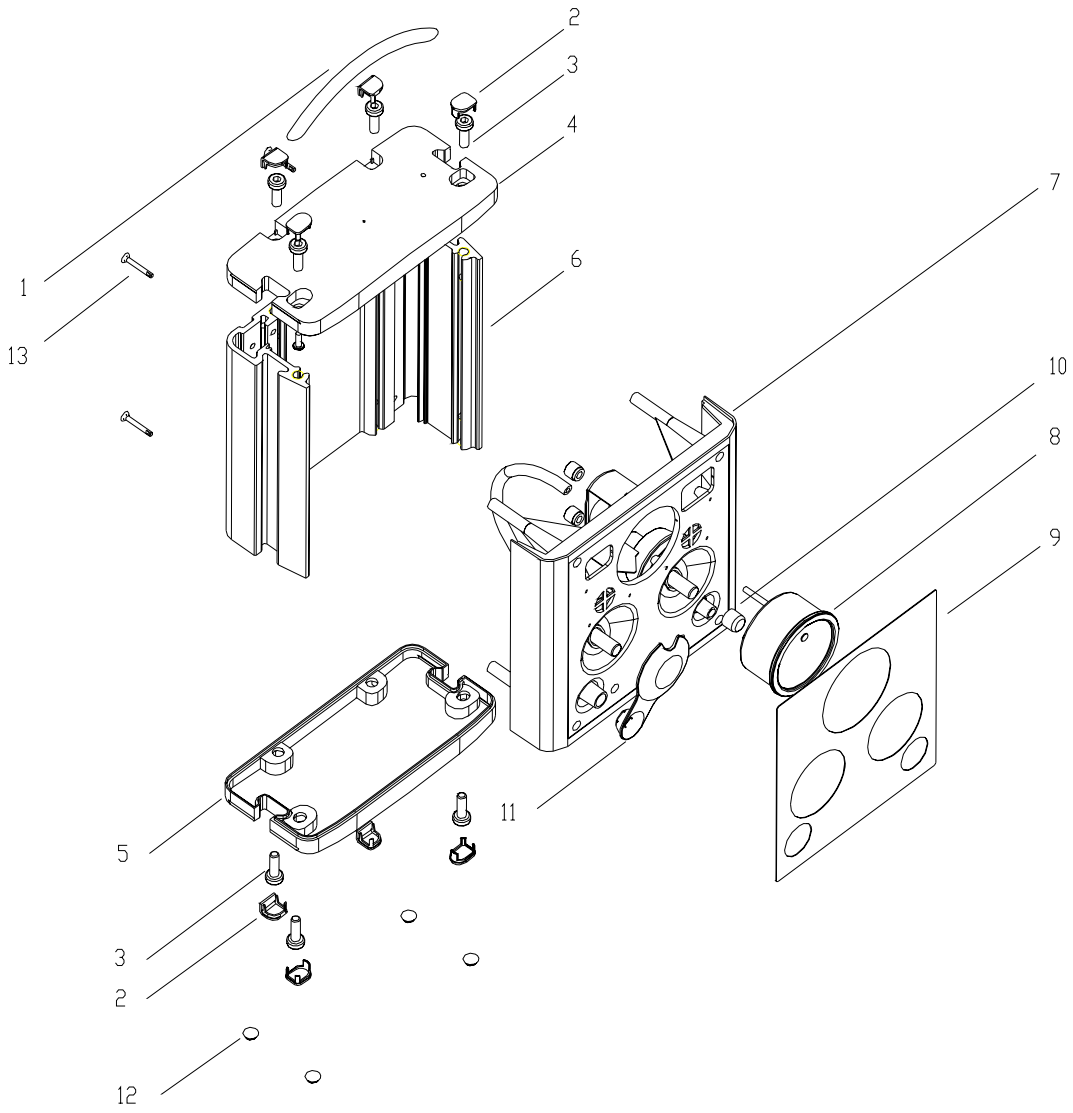
On 29/03/01 serial numbers changed from the above format to the EAN format. The first number in the sequence was 010329000001. There was no change to the model itself.

This RD900 module contains a sealed valve assembly that can not be serviced in the field. If a faulty valve occurs, the entire panel and valve assembly must be replaced.

11.4.1 900IW130x Neopuff™ Module Version 2 Assembly Parts List (Manufactured from May 1999)

Item	*Part Number*	*Description*	*Reqd.*
1	641040809	Handle	1
2	693040706	Plug (set of four	2
3	614040309	Screw M8x20	8
4	043042565	End cap (upper	1
5	043042564	End cap (lower	1
6	641040816	Back cover	1
7		Model specific panel and valve assembly (kit includes fascia)	
	043042347	English	
	043042348	German	
	043042349	Italian	
	043042350	Spanish	
	043042351	French	
	043042352	Japanese	
	043042353	Dutch	
	043042354	Swedish	
	043042355	Portuguese	
	043042356	Danish	
	043042357	Finnish	
8	043040841	Manometer kit	1
9		Model specific front fascia, please specify exact model	1
	233201448	English	
	233201467	German	
	233201468	Italian	
	233201469	Spanish	
	233201470	French	
	233201471	Japanese	
	233201518	Dutch	
	233201521	Swedish	
	233201522	Portuguese	
	233201523	Danish	
	233201524	Finnish	
	233201525	Norwegian	
10	043042345	Cap, inspiratory pressure valve	2
11	043041057	Cover, maximum pressure relief valve	1
12	693041436	Foot	4
13	616050011	screw #8x1” Csk hd	4
---	614040117	Screw M4x8 Pan hd (not shown, handle attachment)	2
---	500RD106	Test lung (not shown)	1

11.4.2 900IW130x Neopuff™ Module Version 2 Assembly Diagram (Manufactured from May 1999)



11.5 900IW130x Neopuff™ Module Assembly - Version 1 (Before May 1999)

The early Neopuff™ module used the internal components from the RD1000 series of stand-alone Neopuff™. These valves are no longer available, and a Version 2 valve assembly should be ordered in the event of a valve fault. See 11.5.1for further information.

For serial numbers predating 99R9___083, manufactured before May 1999, the diagram below represents the internal components of the RD900 Infant Resuscitator.

11.5.1 900IW130x Neopuff™ Module Version 1 Assembly Parts List (Jan 1997 – May 1999)

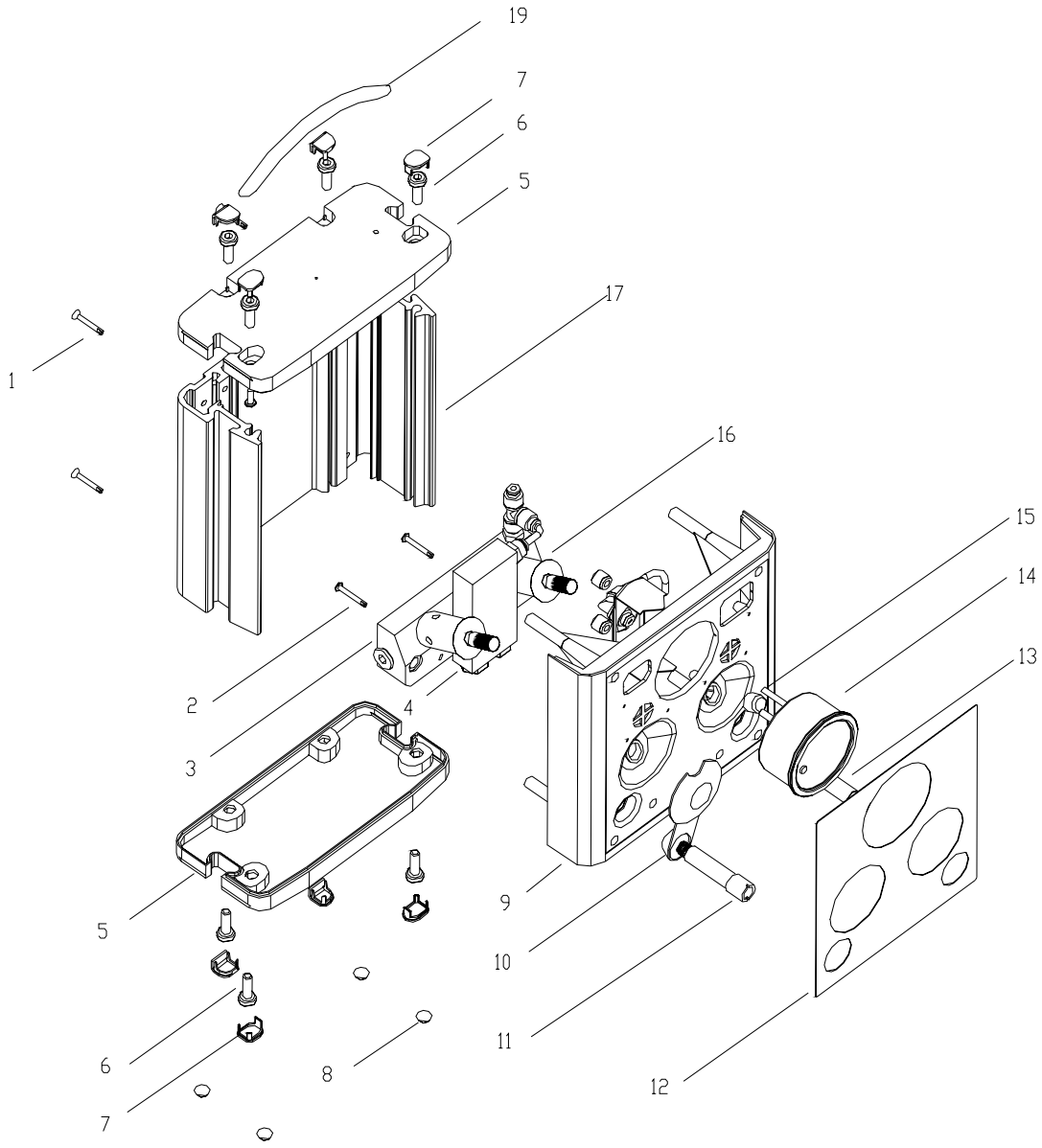
Item	*Part Number*	*Description*			*Reqd.*
1	616050011	Screw #8x1" CSK HD			4
2	614040153	Screw #8x1" Pan HD			2
3	**See note**	Manifold block. Includes plug, T-piece, tube and 2 screws.			
4	**See note**	Reservoir. Includes 2 bungs, fitting and tube			
5	693040741	End cap			2
6	614040309	Screw M8x20			
7	693040706	Plug set of 5			1
8	693041436	Foot			4
9	**See note**	Plastic panel			
10	043041057	Cover, max pressure relief, permanent and removable			
11	500RD509	Connector 10mm female gas inlet			
12		Model specific front fascia, please specify exact model			1
	233201448	English	233201518	Dutch	
	233201467	German	233201521	Swedish	
	233201468	Italian	233201522	Portuguese	
	233201469	Spanish	233201523	Danish	
	233201470	French	233201524	Finnish	
	233201471	Japanese	233201525	Norwegian	
13	500RD508	Connector 10mm male gas outlet			1
14	043040841	Manometer kit			1
15	043042345	Cap, inspiratory pressure valve			1
16	**See note**	Valve assemblies, pair			
17	641040816	Column			1
18	614040117	Screw M4x8 Pan HD			2
19	641040809	Handle			1
---	500RD106	Test Lung (not shown)			
---	500RD521	Service kit, includes C-spanner and adaptor for torque driver			

NOTE: Parts 3, 4, 9 and 16 are no longer available due to model update to that shown in 11.4.1. To replace any of these parts please order from the following language specific panel, fascia and valve assembly spare part:

Model specific panel and valve assembly (kit includes fascia)

043042347	English	043042353	Dutch
043042348	German	043042354	Swedish
043042349	Italian	043042355	Portuguese
043042350	Spanish	043042356	Danish
043042351	French	042042357	Finnish
043042352	Japanese		

11.5.2 900IW130x Neopuff™ Module Version 1 Assembly Diagram (Jan 1997 – May 1999)



PART 12: Medela Phototherapy–900IW501xx/900IW502xx

To contact Medela Head Office:

Medela AG
Medical Technology
Lattichstrasse 4
6341 Baar/ Switzerland
Email: customer.service@medela.com

12.1 Phototherapy Performance Characteristics and Specifications

NOTE: Some people have a sensitivity to blue light and may experience nausea.

12.1.1 Phototherapy Technical Specifications

Power Supply	220 - 240V ~ 50Hz 0.9A
	120V ~ 60Hz 1.8A
Power Consumption	90W
Lamps	Fitted with four x 18W fluorescent tubes emitting light in the wavelength of 425-475nm
Lamp Dimensions (L x W x D)	65 cm (25.6") x 26 cm (10.2") x 8 cm (3.1")
Lamp Weight (with 4 tubes)	2.2 kg (4.8 lb)
Lamp head rotation	-90° to +90° from centre position
Power Module Dimensions (L x W x D)	19 cm (7.5") x 20 cm (7.9") x 8.5 cm (3.3")
Power Module Weight	1.4 kg (3.1 lb)

Equipment Classifications

Class II Type B
Continuous Operation
Not classified against ingress of liquids
Not suitable for use in the presence of flammable anaesthetics

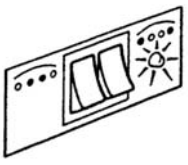
Environmental Specifications

	Operation	Transport	Storage
Temperature	18 °C to 30 °C	5 °C to 50 °C	-10 °C to 60 °C
Humidity	0 % to 90 %	0 % to 90 %	0 % to 90 %

12.1.2 Lamp Life Span

The blue fluorescent lamps typically have a life span of 1500 hours

When the Lamp head turns on, electronic monitoring of the blue light is activated. If the light output falls below 75% of a new lamp the warning light illuminates.



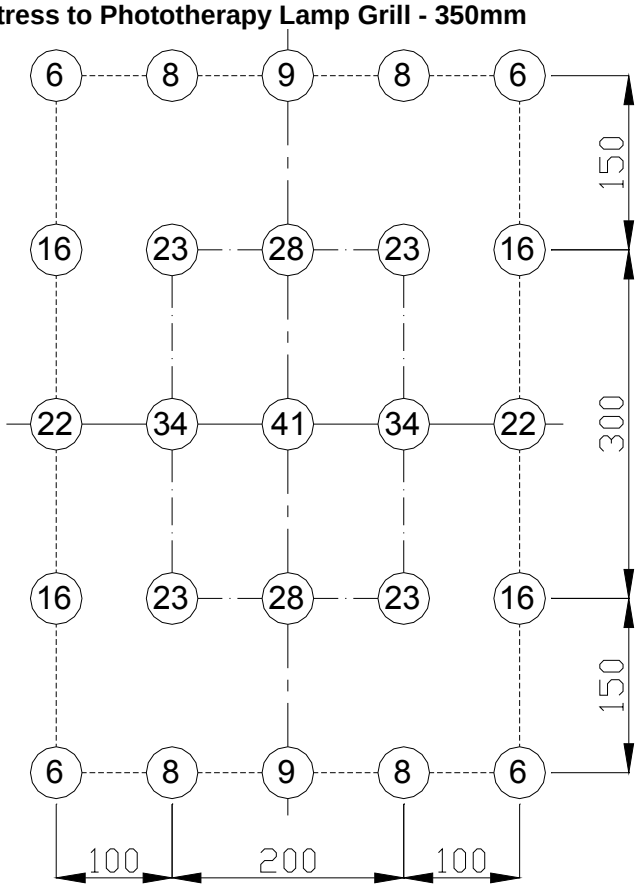
If the warning light stays on for more than 45 minutes after the tubes have been switched on, ALL the blue tubes must be replaced (refer section 12.1.4).

The functioning of the LED warning light that monitors the light intensity can be tested by following the procedure in section12.1.6.

12.1.3 Typical Performance

The diagrams below indicate typical irradiation levels at mattress level as measured from a 230V/50Hz unit fitted with four blue fluorescent tubes. Irradiance figures are in $\mu W/cm^2/nm$.

Distance From Mattress to Phototherapy Lamp Grill - 350mm

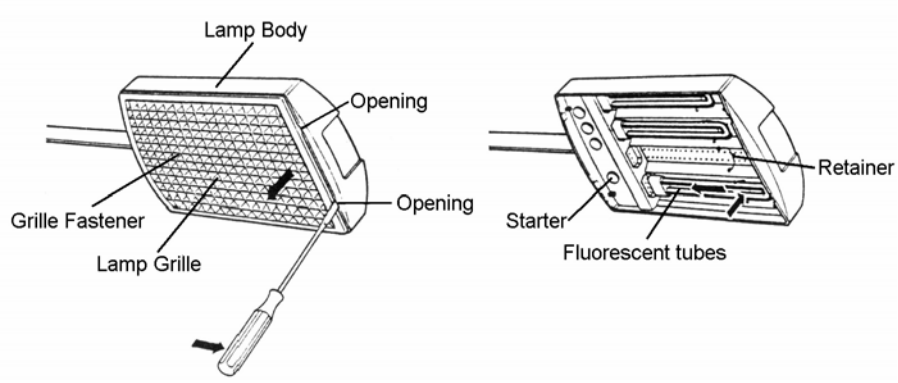


The phototherapy unit should be placed at approximately 350mm to achieve a target level of 30-35 $\mu W/cm^2/nm$ at the mattress surface.

⚠ ***WARNING*** – The patient should be monitored in terms of temperature and fluid balance. The patient should also be monitored for toxic effects from the breakdown of bilirubin and from any drugs infused within the blue lights.

12.1.4 Installing or replacing the fluorescent tubes

1. Ensure the lamp head is turned off and unplugged from the power module before replacing fluorescent tubes. Use only the exact replacement fluorescent tubes as they are specifically for phototherapy. No other fluorescent tubes are suitable.
2. Using a flat blade screwdriver, turn the grille fastener 90° anticlockwise. Insert the screwdriver on one side of the lamp body alternately in the two openings and press lightly outwards until the grille springs out of its holder.
3. Release the fluorescent tubes from the clips and carefully remove them from their sockets
4. Check whether the lamp and grille reflectors are clean and shiny; clean if necessary.
5. Insert the new fluorescent tubes into the retainers, then push the fluorescent tube into its socket. Do not put excessive force onto the glass part of the tube. Insert and remove tubes by holding the plastic base only.
6. On the inside of the Lamp body there are protruding support ribs. Place the grille on these ribs and press until it clicks in at all 4 corners. Turn the grille fastener 90° clockwise.



12.1.5 Replacing the starters

A faulty starter either causes the fluorescent tubes to flicker for an excessive period of time when they are switched on or fails to trigger the tubes.

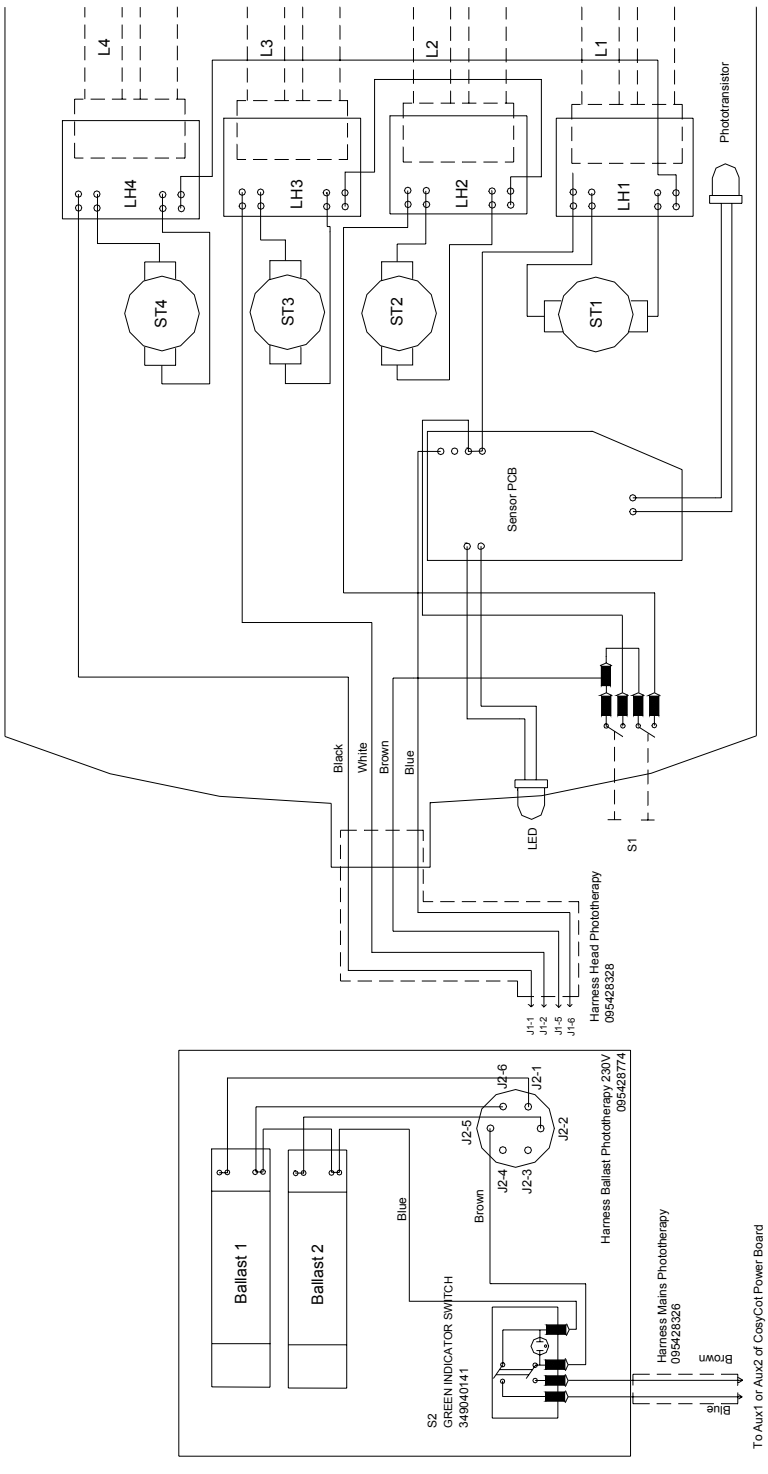
1. Ensure the Lamp head is turned off and unplugged from the Phototherapy Power Module before replacing starters.
2. Remove the Lamp grille (as for replacing fluorescent tubes – section 12.1.4).
3. The four starters are now visible. The two inner and two outer fluorescent tubes and starters are connected in pairs. It is therefore recommended that the two starters that belong together be always replaced at the same time. Turn the starter approx. 90° anticlockwise and remove.
4. Insert the new starter (do not use an electronic type!) and turn it clockwise as far as possible.
5. Replace the Lamp grille (as for replacing fluorescent tubes – section 12.1.4)

12.1.6 Testing the LED warning light

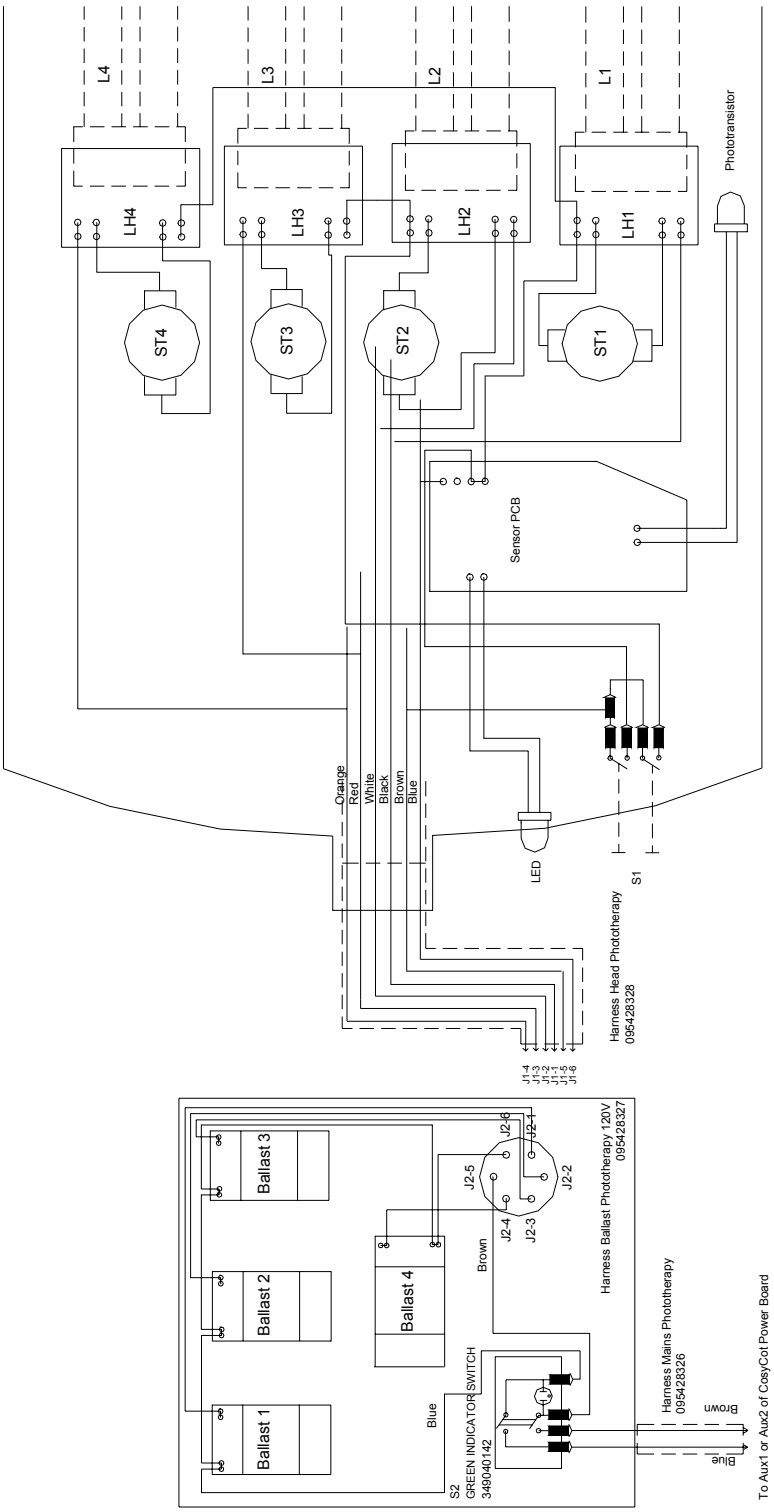
1. Turn the lamp head so that the tubes are facing up and remove the lamp grill.
2. Turn on the outer fluorescent lamps only. Ensure the lamp is not in direct sunlight.
3. Place your finger between the outer fluorescent tube and the lamp housing so that it is approximately 10 cm from the blue sensor. The LED should not light up.
4. Slowly move your finger towards the sensor and watch until the LED lights up. Shortly before your finger reaches the sensor, the LED should go out.
5. Refit the lamp grill.

Intentionally Blank

12.1.7 Circuit Schematic for 230V Phototherapy Units



12.1.8 Circuit Schematic for 120V Phototherapy Units



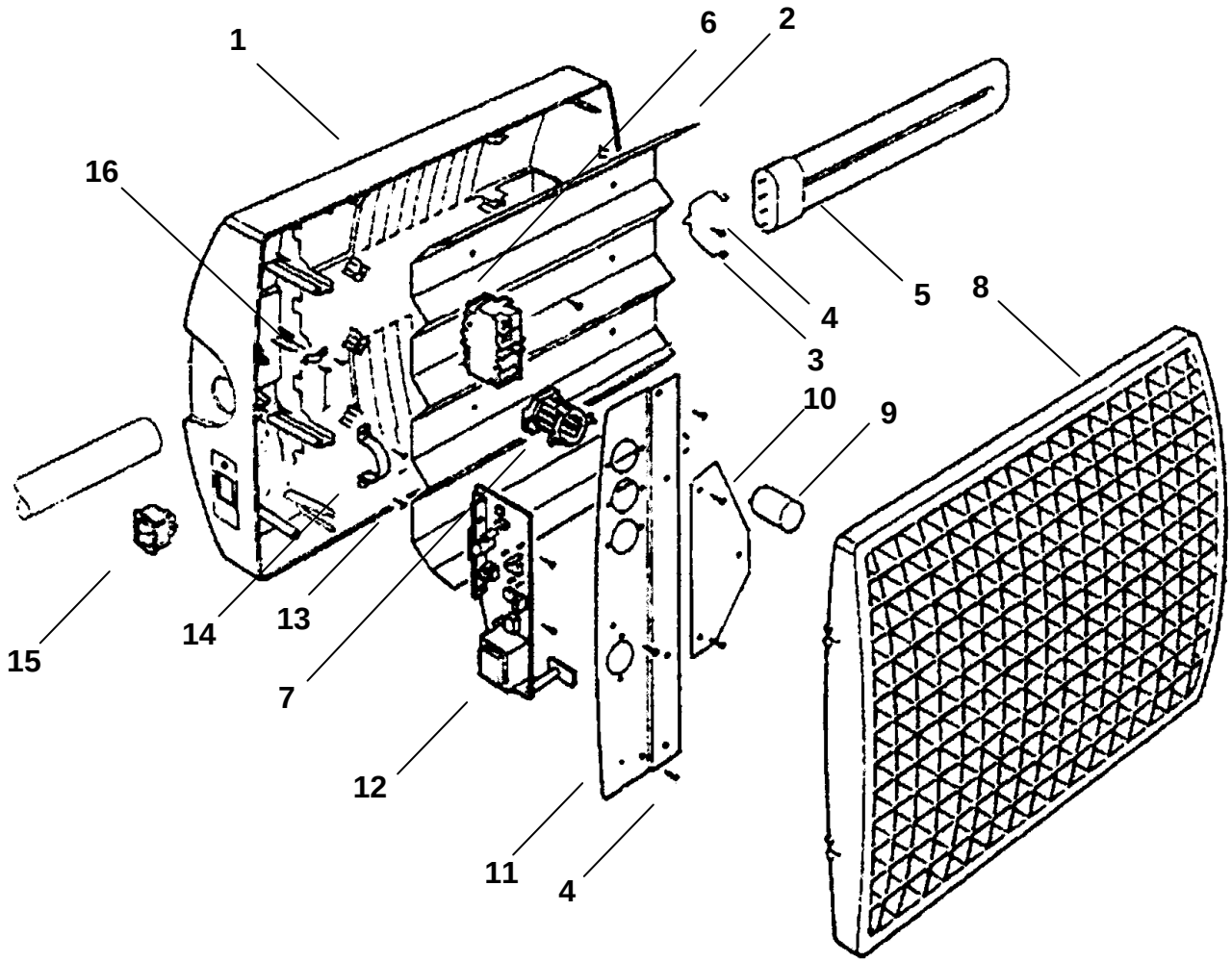
12.2 900IW501xx Phototherapy Lamp

NOTE: Spare parts for components within the Phototherapy lamp housing (1) are available from Medela distributors using the order numbers listed on the right of the part descriptions.

12.2.1 900IW501xx Phototherapy Lamp Assembly Parts List

Item	*Part Number*	*Description*	*Medela Order Number*
1	694042271	Cover Phototherapy Medela	810.0255
2	642042059	Reflector	522.1453
3	642042060	Lamp Clip	524.0054
4		Screw PT LI KPF KA 30 x 10	436.0003
5	424040070	Light Fluorescent 18W Blue	936.0015
	424042001	Light Fluorescent 18W White	936.0016
6	342042025	Lamp holder	899.0060
7	342042026	Starter Holder	899.0063
8	694042317	Grid	810.0256
9		Starter 110/220 V	937.0004
10	642042063	Grid Holder	521.0097
		Screw PT LI KPF KA 30x10	436.0003
11	694042317	Cover	810.0257
12		Sensor PCB 230V	900.0305
		Sensor PCB 120V	900.0318
13		Screw PT LI KPF KA 10 x 10	436.0010
14	642042061	Tube Clamp	599.0057
15		Double Rocker Switch	934.0158
16	642042062	Cable Clamp	599.0058

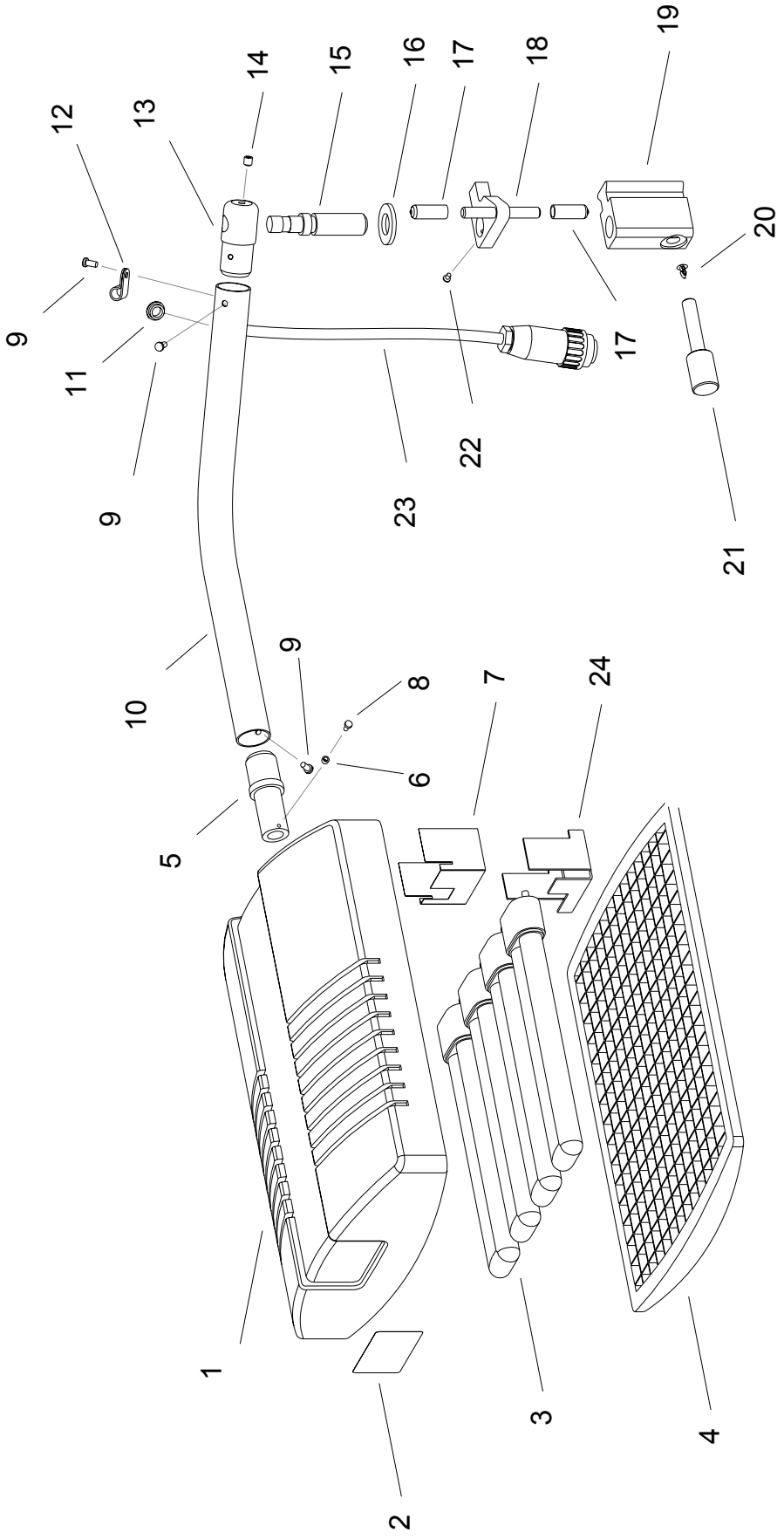
12.2.2 900IW501xx Phototherapy Lamp Assembly Diagram



12.2.3 900IW501xx Phototherapy Mounting System Assembly Parts List

Item	*Part Number*	*Description*
1	694042271	Cover Phototherapy Medela
2	183041925	Label Warning Phototherapy
3	424040070	Light Fluorescent 18W Blue
	424042001	Light Fluorescent 18W White
4		Grill for Medela Phototherapy head
5	648040154	Support Phototherapy Hollow
6	653040125	Spacer Aluminium 5 OD x 3 ID
7	331041113	Insulator Phototherapy Lamp
8	614041478	Screw M3 x 6 Cheese head
9	614040117	Screw M4 x 8 Pan Phil Taptite
10	648040152	Arm Phototherapy
11	336060154	Grommet 11.1 x 8 Dia. Black
12	647040127	Cable Clamp P Type 8mm
13	648040153	Support Phototherapy Solid
14	614040451	Screw M6 x 6 SS Grub
15	651040221	Pin Support Phototherapy
16	621042002	Washer Nylon 15.8 x 25.4 x 2
17	694042124	Cap Plas ID7.1 x 25mm Black
18	642042026	Phototherapy Swing Limit
19	641040795	Block Support Dovetail IW2G
20	336060132	Plug Hole Cover natural nylon
21	651040192	Knob Screw Assy M10 Length 46
22	610042003	Screw M3 x 6 CSK Pozi
23	095428328	Harness Head Phototherapy
24	694042433	Support Insulator Phototherapy

12.2.4 900IW501xx Phototherapy Mounting System Assembly Diagram

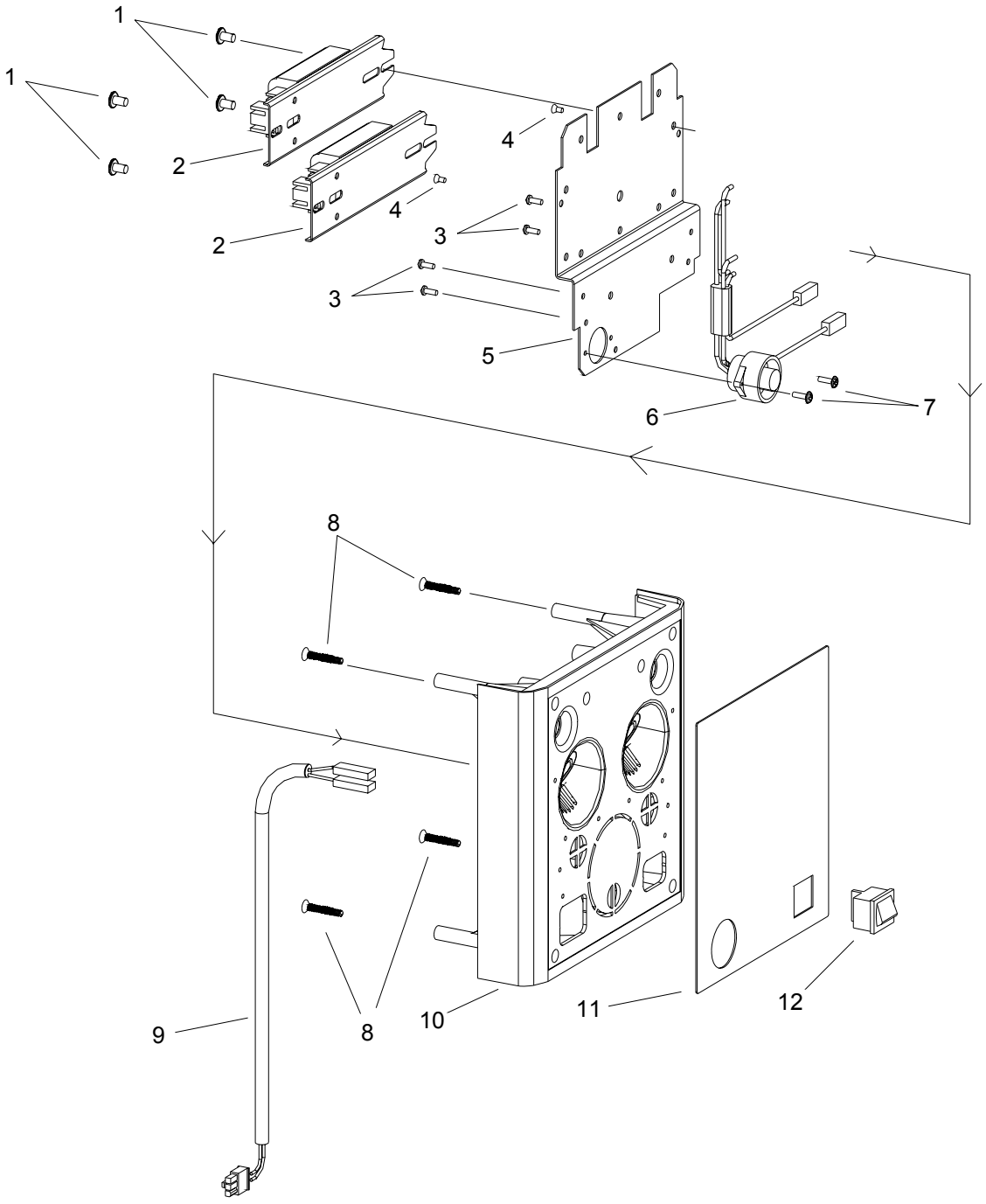


12.3 900IW502Ax Phototherapy Power module – 230V

12.3.1 900IW502Ax Phototherapy Power module – 230V Assembly Parts List

Item	*Part Number*	*Description*
1	614041480	Screw M5 x 8mm Pan Pozi Taptite
2	424040071	Ballast Fluorescent 230V 50Hz
3	614040132	Screw 3 x 8 Plas W/Hd Phillips
4	614041479	Screw S/T 4G x ½" CSK ZP
5	641040833	Plate Mounting Phototherapy Power
6	095428774	Harness Ballast Phototherapy 230V
7	614041481	Screw M3 x 10 Pan Pozi Taptite
8	616050011	Screw #8 x 1 Csk Phillips TYP 25 (Recommended torque 1.2Nm)
9	095428326	Harness Mains Phototherapy
10	693040709	Panel Accessories IW2G
11	233201501	Panel Fascia Phototherapy
12	349040141	Switch Rocker 250V Green

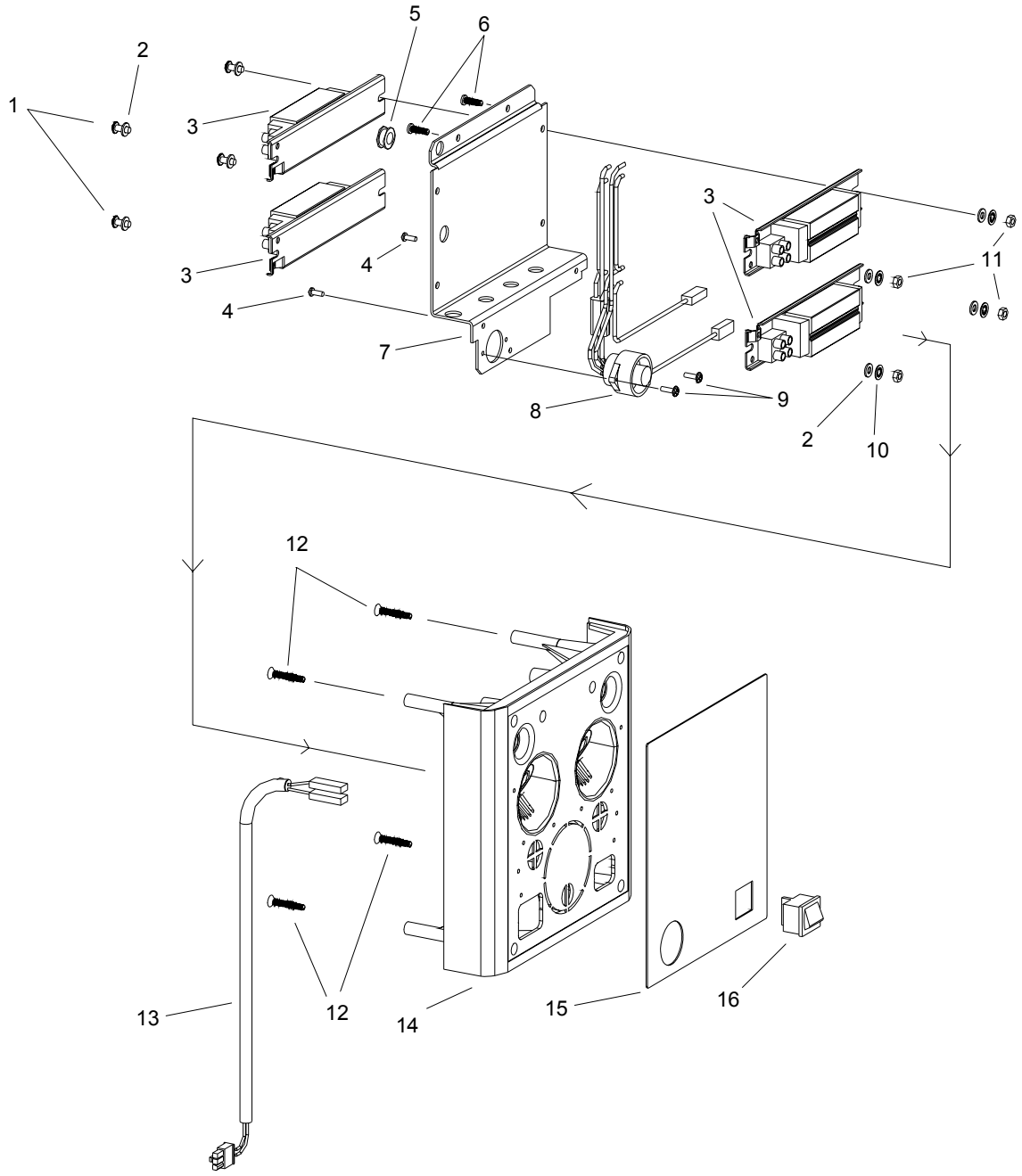
12.3.2 900IW502Ax Phototherapy Power module – 230V Assembly Diagram



12.3.3 900IW502Jx Phototherapy Power module – 120V Parts List

Item	*Part Number*	*Description*
1	614040275	Screw M4 x 10 Pan Pozi Zn
2	622040406	Washer M4 x 9 x 1 Flat
3	424040072	Ballast Fluorescent 120V 60Hz
4	614040132	Screw 3 x 8 Plas W/Hd Phillips
5	336060154	Grommet 11.1 x 8 Dia. Black
6	614040120	Screw #8 x ½ Pan Phillips TYP 25
7	642042027	Plate Mounting Phototherapy Ballast
8	095428327	Harness Ballast Phototherapy 120V
9	614041481	Screw M3 x 10 Pan Pozi Taptite
10	622040130	Washer M4 Lock
11	621040904	Nut M4 Full Hex Yellow Chrome
12	616050011	Screw #8 x 1 Csk Phillips TYP 25 (Recommended torque 1.2Nm)
13	095428326	Harness Mains Phototherapy
14	693040709	Panel Accessories IW2G
15	233201501	Panel Fascia Phototherapy
16	349040142	Switch Rocker 110V Green

12.3.4 900IW502Jx Phototherapy Power module – 120V Assembly Diagram



PART 13: Warmer Identification

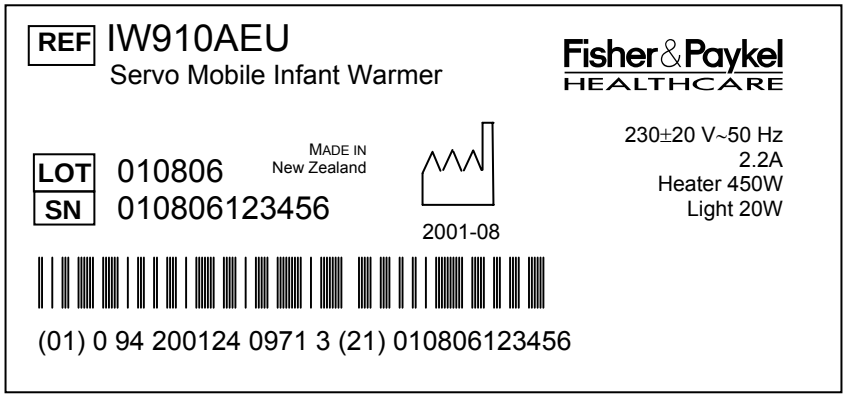
13.1 Infant Warmer Serial Number Explanation

Infant Warmer serial numbers can be found on the back of the column immediately behind the control panel or for IW93x, IW95x, IW960 and IW970 CosyCot™'s the serial number is located on the front of the power supply module at the bottom of the column.

NOTE: that there is also a Neopuff™ serial number fixed to the rear of the CosyCot™ column if a Neopuff™ is included with the CosyCot™. This serial number is specific to the Neopuff™ and does not define the warmer.

From June 2001

A change was made to EAN standard serial numbers to identify all products manufactured by Fisher & Paykel Healthcare.



The section of label pictured is typical of the information contained on a warmer label.

REF - This details the model number and identifies voltage, language and distributor specifics (see table below)

LOT - The production date: (01) = 2001, (08) = August, (06) = sixth day
NOTE: This is not specific to a particular warmer

SN - The serial number is specific to the particular warmer. The first six digits match the LOT number and the last six digits identify the specific product serial number.

The bar code consists of the following predefined application identifiers:

01 - Not used

0 - Sequence start

94 - Country of Manufacture - New Zealand

200124 - Company Identifier - Fisher & Paykel Healthcare

0971 - Product Code

3 - Check Sum

Prior to June 2001

Infant Warmer serial numbers were in the following 12-digit format:

Year	Model	Code	Serial Number
\	|	|	/
96	MM	ABC	XXXXX

The Model and Code letters are made up as:

MM	Model	A	Voltage	B	Language	C	Distributor Option
91	IW910	A	230V ± 20V	D	Danish	A	Aust/NZ plug
92	IW920	J	120V	E	English	K	UK power plug
93	IW93x	G	100V ± 10V	F	French	S	Swivel Head
95	IW95x			G	German	U	Universal
96	IW960			L	Italian		
97	IW970			M	Finnish		
98	IW980			J	Japanese		
99	IW990			P	Polish		
				R	Russian		
				S	Spanish		
				T	Portuguese		
				N	Dutch		
				V	Norwegian		
				W	Swedish		
				Z	Chinese		

Notes:

Notes: